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Viral Hepatitis and the Public Health*

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THE sporadic type of what is usually known as acute catarrhal jaundice has for years been the type of liver disease most commonly seen in hospital and general practice. Since the patients were usually young and recovered promptly and since the lesion was generally believed to be "duodenal catarrh" with a "mucous plug" in the ampulla of Vater, little serious thought was given to the condition. The occasional patient whose illness was protracted or who succumbed to the disease was regarded as having another ailment variously known as acute or subacute atrophy or nodular ("toxic") cirrhosis. Not infrequently, the most serious types of the disorder were regarded as examples of Weil's disease.

From time to time, various authors have called attention to the fact that the so-called catarrhal jaundice (Jones and Minot, 1923) was of some importance, that it was increasing in frequency and, at times, in severity, and that there might be residua which were pathologically significant. Virchow's conception of the pathologic lesion was challenged more than 50 years ago by Flindt, and about 20 years later Eppinger gave it the coup de grâce by demonstrating that a diffuse hepatitis was present. In spite of these interpretations of the disease, acute epidemic or sporadic hepatitis was not a subject to compel the attention of medical audiences until about five years ago, when hepatitis occurred in a large number of service personnel who had been inoculated with yellow fever vaccine. This experience was not entirely new, since Fox and his associates had encountered similar difficulties in Brazil, but it served as an impetus to a large number of investigative studies which have changed our conception of this supposedly innocuous ailment and have given it the status of a public health problem of first importance.

It is the purpose of this paper to point out that the disease appears to be increasing in frequency and probably in severity, that it may and often does lead to serious hepatic damage which may be progressive and eventually fatal, and that the present widespread use of blood, blood products and parenteral therapy may serve to disseminate the disease even more widely. Finally, it is hoped that a tentative explanation of some hitherto obscure types of chronic diseases of the liver may be advanced on the basis of these newly acquired facts.

HISTORICAL DATA REGARDING EPIDEMICS

The disease seems to have been mentioned by Hippocrates and has probably occurred during every war since the time of Homer. There is a record of correspondence between Pope Zachariah and St. Boniface, in the Eighth Century, concerning an epidemic of jaundice (Hardy and Feemster). Among the earlier epidemics on record are two which occurred in the Mediterranean area (Minorca, 1745; Ligurian coast, 1793) where the disease seems to be perennially active. Following the tradition of being "an old and ugly camp follower," the disease was widely prevalent in the Franco-Prussian War and in the Boer War. There are references to these earlier epidemics in the reports by Fröhlich and Cockayne. In more recent times, epidemics have occurred in the Eastern Mediterranean area in Russia [65] and in the Scandinavian countries, the epidemic of 1927 being especially widespread. The Scandinavian literature contains a graphic account of some of these outbreaks.[7, 10, 21, 80]

The first American epidemic occurred at Norfolk in 1812, according to Blumer, whose account of the spread of the disease in this country is noteworthy.

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Important for the historically minded is Woodward's account of the disease in the Union armies during the Civil War, when there were more than 52,000 cases and 226 deaths, a mortality rate of about 0.4 per cent. In World War I, American forces were not seriously affected but epidemics of various sizes continued through and after the war years in this country. An increase in acute yellow atrophy of the liver was noted following World War I (Berglund).

The British forces suffered severely from epidemic jaundice in the Dardanelles campaign of World War I; Willcox reported 4,000 cases and a mortality of 0.4 per cent. British forces in the Mediterranean area were again affected in World War II.[49] The disease began with an epidemic in the beleaguered garrison at Malta (1941-1943).[16] By the time American forces entered the war, the stage was prepared for an outbreak of pandemic proportions. As is well known, there were outbreaks in North Africa, Italy, on the European continent[77] and in the South Pacific Islands. More than 200,000 men had the fully developed disease and many more who suffered from it either did not report sick for various reasons or had the anicteric variety of hepatitis.

The spread of the disease since the war is difficult to appraise since the disease is not reportable in most states. Word of mouth information seems to indicate that its high incidence has continued, and in some states where it is reportable this impression is partially supported by figures.

The mortality in these epidemics deserves especial comment. As Cockayne pointed out years ago, there seems to be a correlation between epidemics of hepatitis and the occurrence of increasing numbers of cases of acute yellow atrophy. The connection was borne out in the Swedish epidemic of 1927[7] and recent figures from Denmark, notably those of Alsted and of Jersild, indicate a high incidence of acute and subacute atrophy during the years 1943-1945 inclusive. The mortality of the epidemic disease is in general due to hepatic necrosis, no matter what term may have been used to describe the disease (Lucké and Mallory). Incidentally, the increased mortality in recent years is reflected in figures from Palestine[12, 41] where the death rate is currently about three to six times that usually reported, a circumstance which may reflect crowding and bad sanitary conditions in that country.

ETIOLOGY

For some time past, especially since the studies of Findlay and MacCallum appeared (1937 and 1938), it has been suspected that the etiologic agent of hepatitis had the principal characteristics of a virus. This view is now supported by abundant evidence, although a virus has never been actually demonstrated, cultured, or grown on natural or artificial media. Two viruses and quite possibly more than one strain of each probably are involved. These two viruses have many features in common but differ in two ways; namely, the length of the incubation periods and their mutual failure to confer a heterologous immunity against infection by the other strain.[32, 33, 61] Before discussing the differences, it may be well to consider the characteristics which they share. They have not been seen with the electron microscope and they have not been successfully transmitted to any animal except man, in spite of extensive trials. There is some evidence, not generally accepted, to indicate that swine have been experimentally infected (Andersen). Neither strain can be detected by any specific laboratory method now available; only development of the disease after inoculation of a human being proves the presence of the icterogenic agent, a fact which has confined the study of these viruses to such observations as could be made on human volunteers.

Both viruses will pass through a Seitz filter and other filters which will retain bacteria. They are among the most resistant pathogens. They are able to withstand freezing, exposure to a temperature of 56° C. for 30 to 60 minutes and long storage in the desiccated state at room temperature. They are not killed by a 1:2,000 solution of merthiolate, by a 0.5 per cent solution of phenol in ether or by a 0.2 per cent solution of tricresol. The ordinary type of water chlorination does not affect them. They may be inactivated by autoclaving, by boiling or by exposure to ultraviolet light.

The essential differences in their behavior are shown in Table I. For the purposes of the consideration to follow, Neefe's[58] nomenclature will be used

TABLE 1.—*Differences Between Infectious and Serum Hepatitis* *

	Infectious Hepatitis	Serum Hepatitis
Fever	+	Rare
Incubation period	20-45 da.	60-150 da.
Transmission by ingested feces	+	—(?)
Parenteral transmission	+	+
Homologous immunity	+ (1 yr. +)	+ (18 mo. +)
Heterologous immunity	—	—
Mortality rate	0.01 to 0.20	0.2 to 20.0%
Morbidity, relapses	++	++

* Modified from Neefe, J. R., Stokes, J. R., and Gillis, S. S.: Hepatitis; immunologic studies, Tr. A. Am. Physicians, 59:142, 1946.

and these viruses will be referred to as virus IH (infectious hepatitis, the naturally occurring disease) and virus SH (serum hepatitis, the artificially transmitted form). For a full consideration of these agents and the data on which differentiation is made, the reader is referred to Neefe's[58] excellent review. Only three additional points of clinical interest will be stressed: (1) virus IH may be transmitted by both enteral and parenteral routes, while virus SH has to date been transmitted only parenterally; (2) the period of viremia extends through much of the long incubation period of virus SH, while it is relatively brief with virus IH, and (3) the pathologic lesions induced by either virus seem to be more or less identical but the over-all mortality due to infection with virus SH is considerably greater.

MODES OF TRANSMISSION

As indicated previously, these viruses are extraordinarily resistant to a wide variety of agents and may be transmitted by various means. The naturally occurring disease dependent on virus IH is probably transmitted by the "intestinal-oral" circuit in most instances. It is most readily propagated in areas where there is crowding and poor sanitation, and direct personal contact seems epidemiologically important. The ordinary epidemic in civilian communities pursues a leisurely course over a period of three or four months;[55, 62] whole families may be affected, the members becoming ill one at a time at fairly regular intervals. In a military command in the field, the spread of the infection may be greatly accelerated.[49] Infection by contaminated water certainly occurs, and if so, many persons will contract the disease simultaneously, as in the Pocono camp epidemic which was carefully studied by Neefe and Stokes. Dissemination by droplet infection is believed to occur;[15] there is also a suggestion that the disease may be spread by food or fomites. The field incidence of the disease is high among military officers who often share china and silver in a mess.[44, 81] Kirk, on the basis of his experience in North Africa, expressed the opinion that flies contaminated by human excreta might spread the disease. It has also been felt that the possibility of transmission by biting insects can not be excluded.

The percentage of persons affected in a community in which epidemic hepatitis is present varies tremendously. The age factor may be important; children and young adults are especially susceptible and there is evidence to suggest some degree of immunity in many persons more than 30 years of age. With contaminated water, mass infection may be the rule (65 per cent in the Pocono camp epidemic). In military personnel in the field, an incidence of 40 to 50 per cent is not uncommon. In some American epidemics cited by Blumer, with normal civilian surroundings and a mixed population, the rates of incidence ranged from 5 to 67 per 1,000. How often the virus IH is transmitted by parenteral means remains unknown; that this may occur is well known, as in the disastrous occurrence cited by Murphy.

The transmission of the SH virus is so well illustrated by the familiar story of the incidents which followed yellow fever vaccination that further amplification seems unnecessary.[35, 79] Contaminated human serum transmitted the virus in this instance. There are some recently reported aspects of the matter which merit some consideration. The first has to do with the rates of incidence when large groups are inadvertently inoculated with material containing virus SH. There is an unpublished report of one recent episode in which a large number of men were inoculated in this manner. Frank hepatitis developed in 49 per cent of the men and 27 per cent had evidence of hepatitis without icterus (established on the basis of hepatic functional tests). Other authors have reported about the same incidence in dealing with smaller groups of persons who were inoculated in this manner.

The second aspect has to do with the matter of accidental inoculation by contaminated syringes and needles and concerns the incidence of jaundice in patients subjected to repeated "sticking" for obtaining samples of venous and capillary blood. In one Scandinavian city, it has been reported that about 80 per cent of all instances of hepatitis occurred in persons who had been in hospitals for various reasons and that the rate of occurrence was in rough proportion to the number of acupuncture venipunctures performed. Among diabetic patients, for instance, the incidence of the disease is extremely high. Selander previously noted this high incidence in diabetic patients and there are, of course, numerous reports of instances of infection in diabetic[19] and chrysotherapy clinics.

Finally, the earlier reports on the relation of jaundice to arsenotherapy for syphilis should be mentioned. Only three of the many reports will be considered. That of Ruge, from the German Navy, indicated that in about one of every three cases jaundice had been preceded by arsphenamine therapy. This fact and a progressively rising annual rate of "arsenical jaundice" which he reported would be interpreted today as probably indicating the dissemination of virus SH by contaminated syringes. The report of Stokes and his associates shows the variability of supposed arsenical hepatitis under conditions which exclude practically all variables except the dissemination of hepatitis virus in the manner mentioned. In at least one British clinic[69] where arsphenamine jaundice was a common development during the second or third month of treatment of syphilis, the jaundice disappeared when individual syringes were substituted for the original multiple injection technic. The importance of the accidental transmission of hepatitis by syringes has recently been the subject of a report by the British Ministry of Health.[53] It is now known that bacteria may survive the usual cleansing and sterilizing procedures employed in many clinics and that the much more resistant virus can do so seems certain. Whether the virus transmitted is of the IH or SH type probably makes relatively little difference; the fact remains that the mechanics of present day medicine and the current use of blood and blood products furnish the greatest possible opportunity for the propagation of hepatitis virus. The long period of viremia for virus SH obviously makes it more likely to be transmitted by artificial means. The frequency of the artificial type of transmission of the disease has been verified by many observers[5, 17, 73] and I know of dozens of instances of this so-called homologous serum hepatitis, some of which have been described elsewhere in connection with hepatitis in wounded men.[74]

Serum hepatitis has been observed after the use of measles[50] and mumps convalescent serum, whole blood, pooled plasma, both liquid and dried, and both yellow fever and pappataci fever vaccine contaminated with icterogenic serum. It has an appreciable mortality, as high as 20 per cent in some series. Middleton mentioned a group of cases observed in the European war front in which the mor-

tality rate was 9.5 per cent. These high mortality rates may reflect in part the condition of the patients (often injured or wounded men) rather than the natural virulence of different strains of virus. The size of the inoculum appears to make little or no difference, since serious hepatitis has followed the administration of 0.01 cc. of the icterogenic agent while much larger doses appear to have produced a hepatitis of no more than the ordinary degree of severity.

While plasma is the commonest means of transmission, whole blood may be solely responsible for transmitting the disease. Bradley's figures from the Emergency Medical Service of Great Britain showed that, for instance, the incidence of jaundice was one hundred times higher in transfused casualties than in those not so treated. At one time, homologous serum jaundice following the use of blood or plasma was the commonest cause of death in the United States army hospitals in England, accidents and pneumonia excepted. So well established has this method of transmitting the disease become that one is inclined to agree with Bradley in the following statement: "When hepatitis occurs 40 to 120 days after the administration of a human blood product or other parenteral therapy, it is almost certainly homologous serum jaundice and must be treated as a disease with an appreciable mortality." The implications in the field of diagnosis and in the selection of jaundiced patients for surgical exploration are obvious. On one gastro-intestinal service of which I have knowledge, eight patients who had homologous serum jaundice were admitted with a presumptive diagnosis of obstruction of the common bile duct or a malignant lesion within the past three months. Schiff has recently commented on this fact and has pointed out the dangers involved.

IMMUNOLOGY

There seems to be a gradually decreasing susceptibility to the naturally occurring disease (virus IH) which develops with age. This is believed to be due to the fact that this virus is sufficiently widespread to immunize most of the population by apparent or subclinical infection during the earlier years of life. The experimentally produced disease in human volunteers confers immunity to subsequent inoculation with the homologous virus for at least a year. There is also an antigenic relation between virus IH strains isolated from cases in widely separated parts of the world, but heterologous immunity to virus SH does not develop.[58] Second attacks of the naturally occurring disease are certainly no more common than second attacks of measles or mumps. Finally, from pools of adult human serum, gamma globulin can be prepared which contains antibodies effective against virus IH and possibly also against virus SH infections.

Little is known about immunity to the latter virus, except that which has been learned by studies on volunteers. One attack confers immunity for 18 months at least. As stated previously, no cross immunity between the two viruses has been demonstrated and certainly there is no increasing immunity to SH virus with age, as is the case with virus IH. There is in fact some evidence to suggest that a previous attack of serum hepatitis renders a person somewhat more susceptible than normal to the naturally occurring disease, whereas the reverse is not necessarily true.[58]

The question also arises as to when and where the serum hepatitis virus originated since the disease appears to be propagated only by artificial means. Neefe[58] has stated that certain persons may at times carry the agent in their blood without ever having had clinical or laboratory signs of hepatitis; this fact has been established by a study of donors to plasma pools which were shown to contain the icterogenic agent. Whether or not the virus of serum hepatitis is a variant of IH virus changed by prolonged adaptation to a human host can only be surmised; the matter of some interrelation is suggested by the sudden appearance of serum hepatitis during a time when the incidence of the naturally occurring disease was increasing markedly. The survival of virus in immune persons and in other persons who have the various lesser residua of hepatitis is a matter of great importance. There is to date no information on any possible animal reservoir of the disease, as is the case with other virus infections. Like amebiasis, the disease appears to be transmitted only from man to man and one must, it seems, postulate both the existence of a human reservoir and the probability of a carrier state. Furthermore, one finds it difficult to explain the phenomena that have just been described unless the reservoir is large and the carrier state is a relatively common occurrence. The matter will remain unsettled until some suitable experimental medium can be found for the propagation of the disease.

CLINICAL COMMENTS ON VIRUS HEPATITIS

The clinical manifestations of both virus and serum hepatitis have been described many times both under their proper titles and as "epidemic" or "catarrhal" jaundice. Only a few less generally appreciated aspects will be considered here. There is a considerable variation in the clinical picture in various epidemics in cases which occur sporadically,[43] and in the severity of individual cases in epidemics.[31] Cervical adenopathy and the appearance of abnormal lymphocytes in the blood have been described in some epidemics but not in others; in some outbreaks, neurologic symptoms have been conspicuous (Lyon; Stokes, Owen and Holmes; Byrne and Taylor). There are records of some highly fatal outbreaks (Sandwith, 1904; Tillgren, 1928) and some with an unusually large incidence of residual atrophy of the liver, both acute and subacute (Alsted, 1947; Jersild, 1945). The coexistence of hepatitis with other infectious diseases (notably malaria and dysenteries due to Salmonella) greatly modifies the clinical course of the disease in the direction of increased morbidity and late relapse. The disease is a much more serious affair in pregnant women and the mortality under these circum-

stances is high, a point on which observers all over the world agree. Mortality rates in various epidemics range from a negligible figure through the average of about 0.2 per cent to 2 per cent or more. These variable features suggest the existence of more than one strain of virus.

The existence of cases of anicteric hepatitis has been fully established; as previously stated, this type of the disease is important epidemiologically and, since it may escape early clinical recognition, it may lead to prolonged illness and permanent hepatic injury. Relapses are extremely important and frequent; they may be clinical or "serologic" only, and as Barker, Capps and Allen have shown, are often precipitated by early resumption of physical activity, by the use of alcohol or by intercurrent infection. I have observed several cases in which jaundice has persisted intermittently over a period of several months before the patients finally recovered.

A word must be said here in regard to liver function tests, which are very important in the recognition of the anicteric type of the disease and of relapses and recrudescence. These appear in a fairly regular order at the onset of the disease and disappear in a roughly inverse order during convalescence (Neefe[59]). The tests which are most likely to remain positive long after the disease has passed are those which have to do with alterations in the plasma proteins; namely, the thymol turbidity test and other flocculation tests. Further reference to these tests will be made in considering means of diagnosing the residua of the disease. The significance of persistently positive flocculation tests has been confirmed by biopsy. Microscopic examination of material obtained by needle puncture may reveal active hepatitis six or nine months after all tests for hepatic function become normal.[57]

Finally, some reference must be made to the recorded disturbances in hepatic physiology incidental to either virus or serum hepatitis. These often are severe, if not as permanent, as those seen in cases of cirrhosis. Among those worthy of mention are: (1) disturbed excretory function for the products of hemoglobin disintegration and for certain dyes, (2) a decrease in the concentration of serum albumin, reversal of the albumin-globulin ratio and a change in the electrophoretic pattern,[52] (3) hypoglycemia associated with symptoms referable to the central nervous system, (4) a prothrombin deficit uncorrectable by the administration of naphthoquinone (vitamin K), (5) failure of synthesis of urea and hippuric acid, (6) retention of estrogenic material normally inactivated by the liver (Gilder and Hoagland), (7) disturbances of lipid metabolism and (8) the appearance and disappearance of vascular spiders. In most instances, these changes are of a temporary nature but they reveal clearly the extent of the hepatic injury. Even the retention of water in body tissues, which is characteristic of atrophic cirrhosis, is duplicated on a considerable scale. During active epidemic hepatitis there are evidence of gross retention of water and chloride in interstitial tissue spaces and indications of diuresis and restoration of the normal amount of tissue fluid during recovery (Labby and Hoagland). This phenomenon is believed to be due to the temporary inability of the liver to inactivate antidiuretic substances formed in the hypophysis.

RESIDUA OF VIRUS HEPATITIS

The residua of virus hepatitis are not completely catalogued in spite of the extensive experience of the last few years, yet enough is known to indicate that many supposedly independent hepatic diseases originate in what was to all intents and purposes an attack of virus hepatitis. Until an experimental animal is available to which the disease can be transferred, some of these supposed etiologic relations must remain on a tentative basis.

It should be emphasized that complete healing of the hepatic lesion is the rule in the great majority of cases. Lucké's studies,[45, 46] which were based on biopsy and necropsy, established this point beyond question and the studies of Roholm and Iversen and of Dible and his associates are, in general, confirmatory.

The cases in which healing does not occur may be divided into four groups: (1) cases in which fulminant hepatitis (acute atrophy) develops; (2) cases in which chronic atrophy or "nodular cirrhosis" develops (3) cases in which a cholangiolitic type of cirrhosis develops, and (4) cases in which minor residua occur. These groups will be considered separately.

Fulminant Hepatitis:

This condition may be described as a fatal form of the disease which pursues its entire course within ten days. Clinically, the condition corresponds to the often described acute yellow atrophy of the liver with which it is probably identical; certainly there are no important clinical or pathologic differences. It is of interest to note that other epidemics in the past have been said to have been associated with a notable increase in the occurrence of this fulminating type of the disease (Ehrstrom, Bergstrand, Bormann). Other authors do not agree that such a correlation exists (Selander). However, the death rate from this cause has risen in this country in recent years[20] (Figure 1).

In cases of this type of the disease, the most striking features are the rapid development of severe hepatic insufficiency, often attended by neurologic findings of great variety, rarely by hypoglycemic convulsive seizures and not infrequently by a hemorrhagic diathesis. At necropsy, the principal findings are those which pertain to the liver; examination of this organ shows an extensive and widespread necrosis of the lobules and complete disintegration of the cellular structure. Lucké and Mallory have described the experience of the United States Army with this condition in the period between August, 1943, and April, 1945. In this period there were 196 deaths from epidemic jaundice; in 53 per cent of the 196 cases in which death occurred, the disease was of the fulminant type. These authors noted that not a single case of fulminant hepatitis was reported

during the 1942 epidemic of hepatitis which followed yellow fever inoculation. In more than half of the cases of fatal fulminant hepatitis which they reported, the disease apparently was due to the transmission of the virus by parenteral means. A number of explanations for the sudden increase in the incidence of fulminant hepatitis have been suggested. A difference in virus strains may be considered or there may be an increase in the virulence of the virus as a result of repeated human passage. Host factors are possibly important since many of the victims had been subjected to the rigors of combat or to other abnormal living conditions.

Chronic Atrophy (Coarsely Nodular Cirrhosis):

In most reports of large series of cases of epidemic hepatitis, reference is made to the occurrence of protracted illness which terminates with the clinical picture of portal cirrhosis after a variable time. This type of the disease affects persons of all ages and of both sexes. The pathologic picture is quite characteristic; whole lobules of the liver may be destroyed and leave only the connective tissue framework, while other areas may be the site of coarse nodular regeneration. The structure of the liver is grossly disorganized and distorted, which produces the condition which Mallory designated as "toxic cirrhosis." [51] The bromsulfalein test for liver function discloses a marked retention of the dye. The cephalin cholesterol test and the thymol turbidity test are positive. The prothrombin time increases, and the values for cholesterol and cholesterol esters decrease progressively.

Recent reports from Scandinavian countries indicate that the incidence of this progressively destructive hepatitis is high among women who are past the menopause (Jersild, Alsted). The reason for this is obscure. I have observed several cases of coarsely nodular cirrhosis in which the patients were young males.

The disease appears to be progressive in spite of treatment and the outcome usually is unfavorable.

Chronic Hepatitis Associated with Jaundice ("Cholangiolitic Cirrhosis"):

The literature contains reports of cases in which a prolonged jaundice with remarkable preservation of the essential functions of the liver has followed in the wake of what was supposedly an ordinary form of infectious hepatitis. In these cases the disease resembled the hypertrophic biliary cirrhosis described by Hanot, a classification which has become a sort of catchall for all types of chronic unexplained jaundice. The profession is indebted to Watson, Hoffbauer and Howard for clarifying this subject and for their description of what they termed "cholangiolitic cirrhosis," a very gradually progressive form of hepatitis characterized by the phenomena usually associated with regurgitation jaundice (hyperbilirubinemia, hyperphosphatasemia, hypercholesterolemia) and well-preserved metabolic function. Liver biopsy revealed a progression from mild hepatitis to advanced portal cirrhosis; in Case 10 of their series, this process continued over a period of 33 years and death finally occurred as a result of hemorrhage from esophageal varices. Chester Jones has mentioned a similar experience. In each instance, a member of the patient's family had jaundice at about the same time as the patient did; the jaundice in the member of the family had disappeared while the patient's illness had become progressive and permanent. There are undoubtedly many similar cases not as yet recorded but the relation of the disease to infectious hepatitis rests as yet on purely circumstantial evidence.

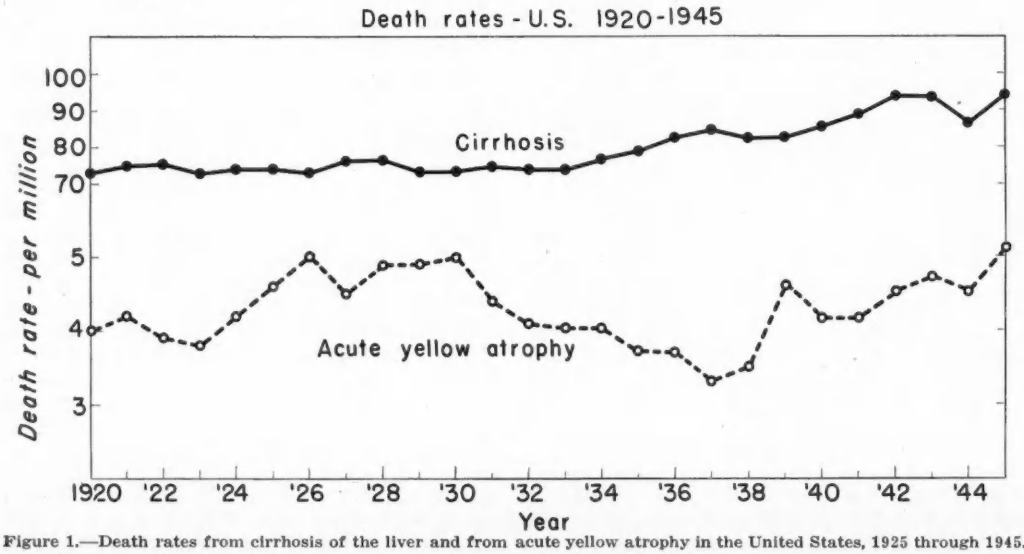

Figure 1.—Death rates from cirrhosis of the liver and from acute yellow atrophy in the United States, 1925 through 1945.

Minor Residua:

The minor residua of hepatitis are so designated here merely to distinguish them from the serious and progressive conditions previously mentioned. The existence of residual hepatomegaly and disturbances of hepatic function has been known for years (Polack, Rennie, Altschule and Gilligan) but not much clinical significance was attached to them (in spite of Bloomfield's suggestions as to their possible relation to a later cirrhosis) until Barker and his associates rediscovered the disease in the Mediterranean theater of war. It is a matter of common knowledge that there are many persons who bear the anatomic and physiologic scars of hepatitis (both IH and SH types) incurred during the recent war, and follow-up studies in such cases constitute a major medical problem for this generation of physicians and the next. Both active and inactive forms of chronic hepatitis undoubtedly exist. What their eventual outcome will be can only be surmised. I am inclined to share the views of Klatskin and Rappaport, who found clinical and laboratory evidence of residua in about half of a series of cases seen from a few months to 27 years after an acute episode of hepatitis but who did not feel that their findings were necessarily indicative of the development of progressive damage of the liver. A number of reviews of such cases will be made in the near future and until a large and statistically significant sample of late World War II hepatitis is studied the matter is best left undecided.

PREVENTION AND CONTROL

The excreta of patients with active infectious hepatitis should obviously be handled in the same manner as are those of typhoid patients, in spite of the fact that the length of time the feces contain the virus is not known. Considerable care should be exercised in regard to the handling of syringes and needles used in obtaining specimens of blood from, or in giving intravenous infusions to, such patients; they should be boiled or autoclaved before being used for other purposes. Particularly during epidemics, all possible precautions should be taken to avoid contamination of food, water and milk. Screening should be practiced to exclude transmission of the disease by insects.

Passive protection of persons exposed to the naturally occurring disease may be furnished by the administration of human gamma globulin (Gellis, Stokes and others, and Havens and Paul). The material is not available as yet for large scale general use, but it may be advisable to employ it in the protection of pregnant women or exposed persons in whom the disease might carry an unusual risk.

The protection of the community against serum hepatitis is a complex and difficult problem, particularly so since it is impossible to detect the virus of the disease in the blood of prospective donors by any means now available. Exclusion of persons, in whom hepatitis may be developing or who have just recovered from it, by some simple tests, such as the modified Harrison spot test for bilirubin or one of the flocculation tests, should be considered. Obviously, donors of blood should also be questioned carefully regarding any previous history of illness. Unfortunately, persons who have epidemic hepatitis without jaundice as well as persons who have to all intents and purposes never been ill may be carriers of the icterogenic agent (virus SH). Against this phenomenon, all precautions seem likely to be useless. Suggestions have been made as to the size of the pool of blood from which plasma is made. Very large pools would, of course, tend to dilute the icterogenic agent, but in view of the extremely small amounts required to transmit the disease, this approach does not appear entirely practical. Such large pools may all provide some protective antibodies against the disease. Small pools would, of course, tend to reduce the mathematical chances of transmission. Treatment of the plasma with ultraviolet light has been suggested by Oliphant and Hollaender, and this method seems to have promise. The plasma proteins may be altered somewhat by this treatment but there is no evidence of damage to antiviral and antibacterial substances. Passive prevention is still in the experimental stage. The importance of maintaining a diet high in protein and sources of vitamin B complex in ill or injured patients receiving transfusions of plasma is obvious. The use of gamma globulin as a possible preventive measure against virus SH infection is still under investigation. There are some recorded observations which seem to indicate that two 10 cc. doses administered about a month apart furnish a considerable degree of protection against homologous serum jaundice, but further confirmatory evidence is needed to establish the value of the procedure. In cases in which the disease develops after such treatment it does so only after a very long incubation period and the disease is said to have been mild.

For the present, and until such time as prospective carriers of the SH virus can be eliminated or the virus inactivated by some means, the most satisfactory plan will be to limit the use of blood, and particularly plasma, to cases in which the necessity outweighs the risk. When possible, plasma should be followed by two 10 cc. doses of gamma globulin at monthly intervals until a better means of prevention is available.

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Cyclodialysis, Multiple or Single, with Air Injection—An Operative Technique for Chronic Glaucoma*

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THE objective of the procedure to be described is to create a larger dialysis with less trauma than is possible with the ordinary technique of cyclodialysis and to control hemorrhage, thus promoting the formation of a cleft of sufficient size which is permanent. Multiple (or single) cyclodialysis combined with air injection according to the technique described in the following has been in my experience a safer and more effective operation than a single cyclodialysis according to the usual method.

The results reported are based on operations performed on 83 eyes. Primary glaucoma was present in 70 eyes; pressure was normalized in 63. Seven were unsuccessful. Analysis shows that in the eyes afflicted with primary glaucoma, 57 were of the wide angle type. Tension was normalized in 50 of these; in 41 without the use of miotics; in nine, miotics were required. Of 13 cases of the primary narrow angle type with peripheral adhesions ("chronic congestive glaucoma") all were normalized; 12 without the use of miotics and one required miotics.

Of 13 cases of secondary glaucoma, five were normalized without miotics and one with miotics; seven were unsuccessful. The latter comprised cases of venous thrombosis, siderosis, cyclitis and aphakia after unsuccessful trephination in which the surgical prognosis was extremely poor for any operation.

In judging results the condition was considered arrested if function was preserved and intraocular pressure remained less than 35 McLean at least one year after the operation. In most of the cases analyzed in this report, three to ten years has elapsed since operation. All were cases from private practice which lent themselves well to detailed analysis.

INDICATIONS FOR CYCLODIALYSIS

The effectiveness of cyclodialysis is contingent upon its application to the case in which it is indicated.

It is suggested that the ineffectiveness of present-day operations for chronic glaucoma may be due in some measure to improper choice of the kind of operation to suit the individual case. Improper selection would appear to be due to lack of knowledge of the local mechanical or pathologic anatomic cause of increased pressure in the individual case and to absence of classification of the lesion. These would permit a preoperative etiologic differentiation of cases from a surgical point of view and a more rational selection of operation on a causal basis.[1]

In previous communications a pathologic-anatomic classification was suggested[1,2] in which cases of primary glaucoma were divided into the narrow angle (or iris-block) and wide angle types. This has proved a useful guide to the selection of operation and has, in my experience, better assured the effectiveness of the respective operations.

According to this classification cyclodialysis was used in primary glaucoma in cases of the wide angle type and in those cases of the narrow angle type in which a large part of the angle was permanently closed by adhesions. Relative to the former it may be used as an alternative to the external filtering operations. Relative to the latter, it is suggested that cases presenting peripheral adhesions (late stage of the narrow angle type, commonly called "chronic congestive glaucoma") are particularly amenable to cyclodialysis, since there appears to be little tendency for readherance in the region in which the angle was previously closed by adhesions. For similar reasons it appears that repeated cyclodialysis in the area of a previous cyclodialysis in which the cleft has become closed by adhesions is often effective. A high degree of pressure has not contraindicated its use. Although it is assumed that an effort will be made preoperatively to convert a congestive phase into a noncongestive one, congestion does not preclude the operation.

The modified procedure of cyclodialysis described in this article appears to be effective under both congestive and noncongestive conditions. Indeed, in cases of the narrow angle type in which the angle is closed by adhesions and which are in a highly congestive stage, cyclodialysis combined with air injection would seem to be the operation of choice to the exclusion of other operations. In this variety and stage of glaucoma trephination, iridencleises and iridectomy are known to be generally ineffective and associated with considerable hazards. In a series of 13 such eyes operated on according to the technique described, cyclodialysis has been successful in all 13 for periods varying from one to ten years. In one case which had run a congestive course for several weeks with tension of 70 McLean, both eyes were successfully operated on and tension normalized until the death of the patient, 14 months later. Histological examination showed peripheral synechiae extending throughout the circumference of the angle of both eyes, except in the region of the operation. Here the adhesions

* Read before the Section on Eye, Ear, Nose and Throat at the Seventy-fifth Annual Session of the California Medical Association in Los Angeles, May 8, 1946.

had been separated and the angle opened; a cleft leading into the suprachoroidal space was present.*

Cyclodialysis may be indicated in cases in which other operations for glaucoma have failed. In some desperate cases in which the anterior chamber is almost or completely absent it may be used to advantage combined with iridectomy, according to Wheeler.[11]

In secondary glaucoma, ophthalmological experience has indicated that cyclodialysis is especially effective in cases of aphakia and luxation of the lens.

Cyclodialysis is relatively contraindicated, in my experience, in cases of primary narrow angle glaucoma unless adhesions have formed in the angle.[4] When cases of this type have run a noncongestive course, as they often do for many years, they have usually been diagnosed—with cases of the wide angle type—as "chronic simple glaucoma" and have consequently been operated on by cyclodialysis or by an external filtering operation. But in narrow angle glaucoma the crowded anatomic conditions in the angle and the relatively increased vitreous pressure, which tends to propel parts forward and to press the ciliary body against its base, encourages closure of the cleft made by the cyclodialysis. On the basis of clinical experience and postoperative gonioscopic studies, iridectomy[3] (in modified form) appears to give better results. It has been effective in the large majority of cases presenting the narrow angle type of glaucoma before adhesions have formed in the angle.

Summary. Cyclodialysis combined with air injection is indicated in primary glaucoma of the wide angle type. It appears to be the operation of choice in cases of narrow angle glaucoma with peripheral adhesions and in certain varieties of secondary glaucoma. It may be used to advantage on eyes in which other glaucoma operations have failed.

ACTION OF CYCLODIALYSIS

Gonioscopic studies[4,10] have shown that the successful action of cyclodialysis depends upon the formation of a permanent separation or cleft between the ciliary body and its attachment. This is confirmed by the histologic findings in a single case of Elschnig,[6] and in two eyes in the present series which were successfully dialysed and came to section one year after operation. The role of the cleft formation has been confirmed by Clarke,[5] Sugar,[9] inter al.

It is assumed that the aqueous passes through the cyclodialysis cleft into the suprachoroidal space where it is absorbed. The assumption is confirmed clinically by several cases in this series in which an acute rise in pressure followed a gonioscopically demonstrable sudden closure of the cleft, several years after the operation. Reopening of the cleft by miotics resulted in a sudden drop of pressure to the previous normal.

Gradual closure of the cleft, which has been the cause of the frequent lack of permanent results of cyclodialysis, is shown by gonioscopic studies[4] to be due to: insufficient extent of the original dialysis, operative trauma in the region of the cleft, which causes adhesions, or hemorrhage into the anterior chamber (at the time of operation or during the first week of convalescence), which promotes readherence of the ciliary body. Hemorrhage has been a common clinical experience and its influence on closure of the cleft is well known. A direct relationship may be remarked between hemorrhage into the anterior chamber and readherence of the iris root, not only by its incidence but by actual observation of the process of readherence in the individual case along the line of organizing blood clot.

AIR INJECTION IN CYCLODIALYSIS

In 1938 the writer injected air into the sealed anterior chamber with the intention of deepening it and widening the cleft by pushing the iris posteriorly. Immediately following injection, a slight hemorrhage into the chamber, such as commonly occurs in cyclodialysis, was seen to stop. After evacuation of the air from the chamber, no further bleeding occurred.

Furthermore, it was observed that the chamber angle had become image forming, evidently due to the different refractive index of air from aqueous. As a result, the cleft and its widening could be seen by direct observation without the use of a prismatic contact glass; the size or sufficiency of the cleft could in many cases be determined at the time of operation.

The observations made at that time indicated that air injection might become a valuable aid in stopping and in preventing hemorrhage during cyclodialysis, and that it might help in determining the sufficiency of the cleft immediately subsequent to operation, and finally in maintaining the patency of the cleft.

It was next observed in some cases that after several minutes and under certain conditions, there developed a progressive rise in intraocular pressure, evidently as the result of air blocking the free circulation of aqueous, thus producing a secondary glaucoma. The conditions under which this occurred are a sufficient quantity of air under pressure to produce seclusion of the pupil, in some cases combined with obstruction of the angle. In view of this danger, it became evident that only a limited quantity of air could be allowed to remain in the anterior chamber postoperatively to maintain the cleft opening. Further observations on this subject will be published in a succeeding paper.

Various developments and experiences with air injection in a series of over 83 eyes operated on by cyclodialysis since 1938 have confirmed these observations. Air injection has consistently proved effective in stopping and in preventing hemorrhage

* A report of the histological findings in this case will be published in the near future.

in all cases of cyclodialysis in which it has been promptly used.*

In the procedure of air injection for single and multiple cyclodialysis air, followed by physiological saline solution if desired, is injected into the sealed anterior chamber. Both the scleral incision for the injection of air and the corneal puncture for the injection of saline are made in an oblique direction in order that they may act as valve or trapdoor apertures which permit ingress but prevent egress of air or fluid except when this is desired. The anterior chamber is thus air and watertight as regards its contents.

The anterior chamber need not necessarily be completely filled with air. A bubble of air, which does not entirely fill the chamber and does not increase the pressure, will act as an adequate cushion to prevent excessive hemorrhage, keep the cleft free of blood, and perhaps help by its presence to keep the opposing surfaces apart in many cases. However, in cases in which hemorrhage threatens, it appears advisable to inject air under pressure, thus filling the entire chamber.

The amount of air pressure exerted on the inner walls of the anterior chamber can be controlled according to need. The air may be regarded as an adjustable internal tourniquet. After a few minutes of increased air pressure, when the danger of hemorrhage is past, a part of the air may be allowed to escape through an oblique puncture incision made in the cornea with a Graefe knife in order to obtain a valve closure. Or the air released may be replaced if desired by physiological saline solution under pressure. In the latter case the increased intraocular pressure returns to normal within five to ten minutes. Evidently the excess solution is carried off through the physiological channels of outflow and possibly also through the cyclodialysis cleft.

Air injected into the anterior chamber prevents primary hemorrhage during and immediately following operation, by raising intraocular pressure. The presence of air and saline solution in the anterior chamber also neutralizes the suction action of the cornea that otherwise encourages bleeding into the chamber. Later, when the excess air is removed, the substitution of physiological saline solution prevents secondary hemorrhage into the retina or vitreous, such as is caused occasionally by too sudden a reduction of pressure following cyclodialysis in elderly patients with sclerotic blood vessels. It does not, however, appear to discourage the late secondary hemorrhages into the anterior chamber which may occur during the first week following operation.

MULTIPLE CYCLODIALYSIS

Restoration of the anterior chamber by air injection immediately following a cyclodialysis makes it possible to perform a second cyclodialysis. By creating two moderate sized dialyses at the same sitting, it is possible to obtain more consistently an adequate separation of the iris root with less trauma than by a single large dialysis. It is also possible to avoid major blood vessels which are situated in the horizontal meridian.

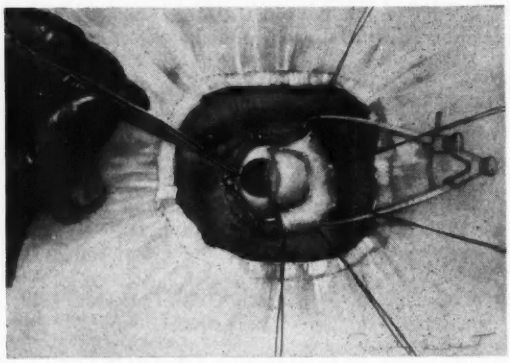

Fig. 1.—A curved conjunctival flap 10 mm. in length is formed extending from 6 to 12 o'clock. The posterior flap is retracted by means of six No. 5 "O" atraumatic single armed sutures of black silk which are attached under some tension to the face mask by means of hemostatic forceps.

Technique. Preoperatively, extreme miosis should be achieved. Anaesthesia may be local or general. The usual injections preliminary to local anaesthesia are carried out. A curved conjunctival flap 10 mm. in length is formed extending from 6 to 12 o'clock. (Fig. 1). After exposure of the sclera in both upper and lower quadrants a tightly wound applicator which has been dipped in adrenalin 1:1000 may be pressed against the areas of the sclera in which the incisions are to be made. Episcleral vessels may be obliterated by cauterization with the end of a strabismus hook which has been heated in an alcohol flame. The posterior conjunctival flap is retracted by means of six No. 5 "O" atraumatic single armed sutures of black silk which are attached under some tension to the face mask by means of hemostatic forceps. The operative area is thus exposed while the outer portions of the lids and the outer canthus are covered by the conjunctival flap whose raw surface is pointing upwards, thereby rendering the area and its surroundings aseptic. The bulbus is fixed at the insertion of the lateral rectus with a fine toothed forceps. The scleral incision is made with a sharp keratome in the lower outer quadrant, 8 mm. posterior to the corneoscleral border and oblique to the surface of the sclera. (Fig. 2).

After the initial incision it is sometimes more convenient to grasp the scleral wound lip itself. The incision is carried through the sclera by successive light strokes of the keratome and is slowly deepened until the lack of resistance indicates that the sclera has been perforated, due care being taken not to incise the underlying choroid. At this point, an iris spatula 3 mm. in width is introduced into the incision in order to test its patency and

* The hemostatic action of air injected during cyclodialysis has recently been noted by Randolph.7

to determine that it is of sufficient length to facilitate later air injection. (Fig. 3). The incision can be made longer. A second incision is now made in the upper outer quadrant in the same manner but care must be taken to make it more obliquely than in the lower quadrant because the sclera is often found to be thinner in the upper than it is in the lower quadrant. This is especially the case in primary wide angle glaucoma, in many cases of which a darkish hue is found in the upper quadrant due to the uvea shimmering through the sclera which may be of almost paperlike thinness, even though the pressure is not markedly elevated. It is likewise tested for its length, another 3 mm. wide spatula being used.

The bulbus is now firmly grasped at the contralateral limbus by an assistant with an Elschnig or Gifford forceps with lock. It continues to be fixed by the assistant throughout the performance of the cyclodialysis and other maneuvers involving air or saline injections. Before beginning the cyclodialysis the surgeon ascertains that four 5 cc. Luer syringes with No. 23 B-D. gold canulae attached and filled with air which has been sterilized by pulling it through a flame or through cotton wool are in readiness. I have found that one accomplishes air injection under pressure more easily and more consistently with a 5 cc. syringe than with a smaller syringe. A syringe is now held by the instrument nurse or by the assistant with his free hand, two inches from the surgeon's hand, in such a position that during the performance of cyclodialysis the direction of the canula corresponds to the meridian of the bulbus in which it is to be inserted, which is the same meridian in which the spatula was inserted. The surgeon now fixes the bulbus at the insertion of the external rectus tendon while he performs a cyclodialysis with a spatula 2 mm. wide which has been appropriately bent. One to 2 mm. of the blade of the spatula appears within the anterior chamber. The handle is rotated in such a manner that the tip of the spatula moves

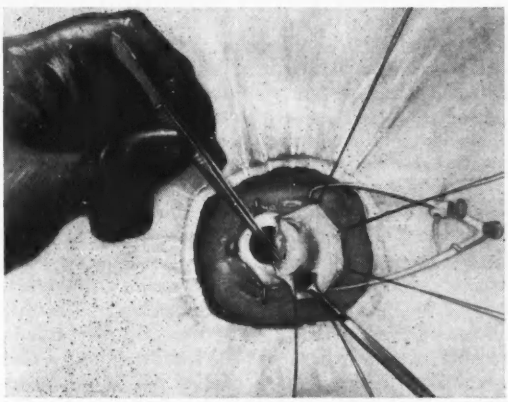

Fig. 2.—The scleral incision is made with a sharp keratome in the lower outer quadrant, 8 mm. posterior to the corneoscleral border and oblique to the surface of the sclera.

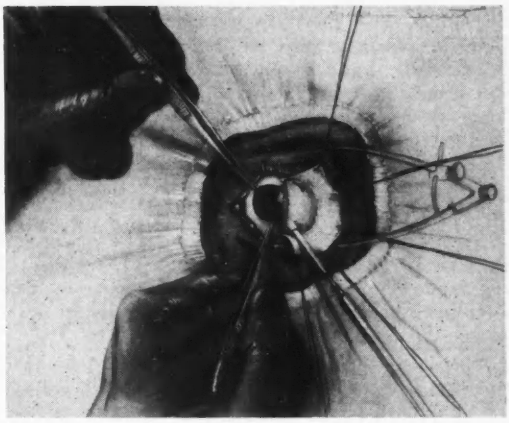

Fig. 3.—An iris spatula 3 mm. in width is introduced into the incision in order to test its patency and that it is of sufficient length to facilitate later air injection.

to the vertical and to just short of the horizontal meridian. It is well to undermine 3 mm. posterior to the corneoscleral border at either end of the sweep and to avoid crossing the horizontal meridian where major blood vessels are located. This maneuver should be followed without loss of a moment by the air injection which has been readied.

At the moment the surgeon removes the spatula, the syringe with gold canula which has been held in proper position is placed in his two hands without his having to look up. He inserts it into the incision from which he has just removed the spatula and immediately injects the air into the anterior chamber. (Fig. 4). This maneuver should take only a fraction of a second. The quantity of air to be injected in the individual case, and whether under pressure or not, is a matter of experience and judgment. The chamber is thus restored with air. After waiting a few minutes to allow hemostatic action to take place, a second cyclodialysis is undertaken in a similar manner.

The air which is lost during the performance of the second cyclodialysis is replaced with another injection of air which again restores the chamber and stops hemorrhage. Since, due to the presence of air, the angle has now become image forming, the region of the cyclodialysis may be inspected by the surgeon looking across the chamber from the opposite side. If the cleft is judged inadequate, the cyclodialysis may be enlarged with another spatula and the air injection repeated.

After a few minutes, when danger of hemorrhage is past, a part of the air may be allowed to escape through a corneal puncture which is obliquely placed with a Graefe knife 1 mm. axial to the corneoscleral border in order to obtain valve closure. If preferred, the air may be replaced by physiological saline solution* injected with a No.

* Because it is to be injected into the anterior chamber, solution from ampoules is used.

30 needle. This puncture is made sufficiently oblique to assure a valve or trapdoor closure. The point of the knife should barely perforate Descemet's membrane as observed under a binocular loupe. A small air bubble (4 to 5 mm. in diameter) is allowed to remain. When combined with appropriate positioning of the head, it will keep the cleft free from blood and help to keep the surfaces apart. (Fig. 5).

Successful insufflation of the anterior chamber with air is assured by continuing to inject air during removal of the canula. If the injection of air is stopped prior to removal of the canula, air will escape during the removal.

The entire chamber may be filled with air, the pressure being adjusted by the amount injected or by secondarily evacuating small amounts as indicated. This process is controlled after closure of the conjunctival wound by the use of a tonometer, the base of which has been sterilized with alcohol and which is held in a sterile clamp, or by testing the dimpling of the cornea with a glass rod.

During the first few days of postoperative care, the patient's head should be kept rotated to the opposite side and raised so that the air bubble will take its position in the chamber angle at the location of the upper cleft. If the patient lies on his unoperated side and is as flat as is compatible with comfort, any slight hemorrhage will gravitate to the lower nasal side away from both clefts. If only a single cyclodialysis has been made in the upper outer quadrant, the patient may assume a semi-sitting position with the head rotated to the opposite side. How effective the presence of air is in widening the cleft and keeping it apart is as yet an open question which only further observations can decide. In some cases, the air bubble has appeared to maintain the separation during the first few days of healing.

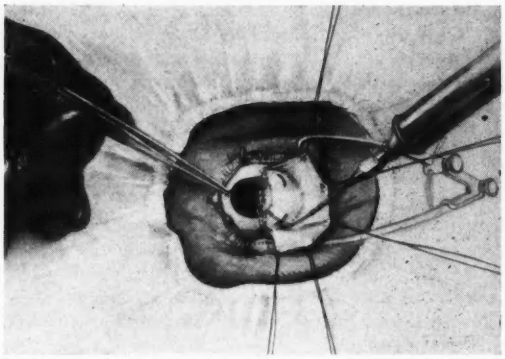

Fig. 4.—Following removal of the spatula the canulae is inserted into the incision and air injected into the anterior chamber. This maneuver should take only a fraction of a second.

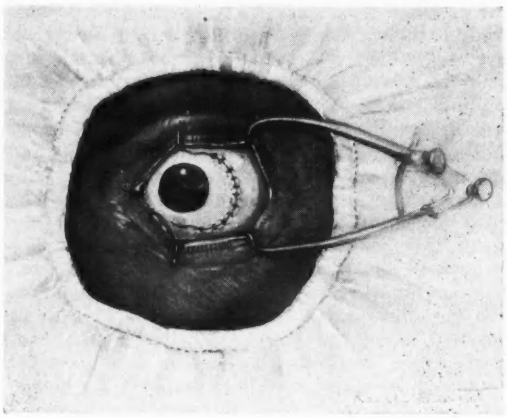

Fig. 5.—The air bubble is placed in the region of the cyclodialysis by appropriate positioning of the head.

POSTOPERATIVE PROPHYLAXIS

During convalescence, maximal miosis should be maintained in order to pull the root of the iris from its base and keep the cleft open. For this purpose, prostigmine 5 per cent is instilled and it may be necessary in some cases to use it as frequently as every three hours and to support its action by the use of 1 per cent eserine ointment. But since there is a marked tendency to formation of pigment adhesions in the pupillary area following cyclodialysis, one drop of adrenalin 1:100 should be instilled, combined with one drop of euphthalmine 2 per cent when deemed necessary, during the first several days of postoperative care to prevent the formation of pupillary adhesions of the pigment layer of the iris while the pupil is in miosis. When this is done the eye must be kept under strict observation and the dilatation of the pupil be only temporary. As soon as moderate dilatation of 3 or 4 mm. has been accomplished, the pupil should immediately be contracted again, lest mydriasis encourage closure of the cleft by approximating the root of the iris to its base. This is especially true if it has been necessary to operate with cyclodialysis on a case of the narrow angle type, or if in a case of the wide angle type, the angle is fortuitously narrow.

That the maintenance of miosis is an effective factor in keeping the cleft from closing was suggested by my experience in several cases of cyclodialysis mentioned above in which a rapid and sudden rise in pressure occurred several months or years after operation. In the case of an aphakic eye with a very extensive cleft, this occurred after eight years of normalized pressure without miotics. Since pressure dropped suddenly following contraction of the pupil with miotics and subsequent gonioscopic examination revealed an open cleft, the increased pressure in this case was evidently due to closure of the cleft. I have therefore come to the conclusion, which I have carried out in practice, that all eyes which have been successfully dialyzed, even though the cleft be gonioscopically wide and extensive, should continue to be given miotics

prophylactically once or twice a day—*not for the purpose of reducing pressure, but for keeping the cleft open.*

There are disadvantages associated with the operation. They are secondary hemorrhages occurring during convalescence (which have, however, interferred with the result in only one case), and the formation of pigment synechiae, which can be prevented in most cases as described in the text. There has been no case of iritis or sympathetic ophthalmia. The main disadvantage of the operation appears to be the formation of cataract or hastening of the development of incipient cataractous changes, especially in those cases in which pressure is reduced to a low normal or below the usual normal limits. Of 70 cases of primary glaucoma, 15 developed cataracts. Ten of these have been extracted, all with good results. Cataractous changes which were already present before operation in 16 other cases have increased. As Reese [8] states: "Eyes with primary glaucoma are more predisposed to the development of cataract than non-glaucomatous eyes. One-third or more of the eyes with primary glaucoma have incipient cataractous changes. Operations for glaucoma in general, and especially the trephine operation, tend to hasten the development of these incipient cataractous changes." This applies also to cyclodialysis but does not interfere with the indication for cyclodialysis in primary narrow angle glaucoma with peripheral adhesions, in aphakia or subluxation of the lens. In all of these it possesses marked advantages over other operations for glacoma.

SUMMARY AND CONCLUSIONS

1. The procedure for cyclodialysis—multiple or single—combined with air injection is described.

2. Air injection controls hemorrhage, widens the cyclodialysis cleft, makes the cleft visible, and by restoring and deepening the anterior chamber, makes possible a multiple cyclodialysis.

3. Multiple cyclodialysis with air injection is safer and more effective than a large single cyclodialysis according to the usual method, because it is possible to make a permanent dialysis more consistently with less trauma and without hemorrhage, and to promote the formation of a permanent cleft of sufficient size by visual control.

4. Under certain conditions continuance of air pressure in the anterior chamber produces obstruction, retention and thus artificial glaucoma.

5. Cyclodialysis combined with air injection is indicated in primary glaucoma of the wide angle type. It is especially indicated, to the exclusion of trephination, iridencleisis and iridectomy in the late stage of the narrow angle type after peripheral adhesions have closed the angle in large part, irrespective of whether there is congestion or not. It is indicated in those varieties of secondary glaucoma in which cyclodialysis is commonly accepted as being indicated.

6. The operative procedure consists of the following steps:

(a) Pre-operatively, extreme miosis should be achieved.

(b) Following the cyclodialysis, air is injected.

(c) The second cyclodialysis is made through a scleral incision in the adjoining quadrant.

(d) Following the second cyclodialysis, air is again injected. The cleft is examined by visual control and if deemed necessary it can be enlarged and the air injection repeated.

(e) Hemorrhage having been prevented, air is replaced after a few minutes by physiological saline solution if it is desired.

(f) A small air bubble is left remaining in the chamber to promote separation of the cleft and keep it free from blood.

(g) Prostigmine 5 per cent is instilled postoperatively to maintain maximal miosis. Postoperative maintenance of miosis is an effective factor in keeping the cleft and the channel of outlet from closing.

(h) Adrenalin 1-100 and euphthalmine 2 per cent should be instilled at intervals of a few days to prevent formation of pupillary adhesions but the mydriasis must be transient only and be adequately counteracted by miotics.

7. A miotic should be used once or twice daily permanently as a prophylactic to assure maintenance of the cleft and channel.

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The Treatment of Acute Hematogenous Osteomyelitis with Penicillin and Sulfonamides Combined*

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THE prognosis in acute hematogenous osteomyelitis is changing for the better in respect to mortality rate, complications, and the degree of disability produced by the bone lesions. The addition of chemotherapy and penicillin to the treatment of the disease is mainly responsible for this marked improvement in its outcome. Since it is oftentimes difficult to appreciate the beneficial effects which new treatments obtain unless careful comparisons are made with the course of patients treated by previous methods, an analysis was made of the records of all cases of acute osteomyelitis due to the staphylococcus which were admitted to the Los Angeles Children's Hospital in the years from 1941 to 1946. The cases were divided into two groups, according to the type of treatment they received.

From 1941 to 1944 there were 16 admissions for acute osteomyelitis. During the acute stage of the disease this group of patients received the derivations of sulfanilamide in one form or another, usually sulfadiazine. During 1944 and 1945 there were nine admissions. These were treated with a combination of penicillin and one of the sulfonamides, and for clarity this group will be referred to throughout this article as the penicillin treated group.

Osteomyelitis is a relatively uncommon disease and this is an insufficient number of cases to establish a statistically valid series but an analysis of these case records nevertheless brings to light certain trends which indicate a more satisfactory prognosis for this disease under its present management.

The mortality in our series of cases was zero. This trend agrees with the conclusions of Kenney [6] who made an extensive study of the mortality rate of osteomyelitis before and since the introduction of chemotherapy. He arrived at the mortality rates from a comparative study of 3,000 cases of acute osteomyelitis which had been reported in the medical literature.

He found that the change from immediate surgical drainage to one of delayed surgical intervention in the acute cases, as adopted about 1934, resulted in a fall in the mortality rate from around 40 per cent to a new low of 23 per cent. Chemotherapy was then introduced and its use succeeded in lowering this figure still further to about 3 per cent. More recently the addition of antibiotics to chemotherapy has reduced the mortality rate to a still lower figure, for penicillin is much more effective than sulfadiazine in sterilizing the staphylococcus infected blood stream. Altemeirer and Helmsworth [1] reported a series of 34 cases which they treated with penicillin without mortality and several other authors have reported a smaller series with essentially the same mortality figures. With the extensive use of penicillin early in the treatment of these staphylococcus infections we feel that we can anticipate a reduction of the mortality rate to less than 1 per cent.

The addition of penicillin did not appreciably reduce the number of days of hospitalization of our series. The average number of days of hospitalization of the group treated with the sulfonamides was 51, while the average for the cases treated with a combination was 47 days. (Figure 1.)

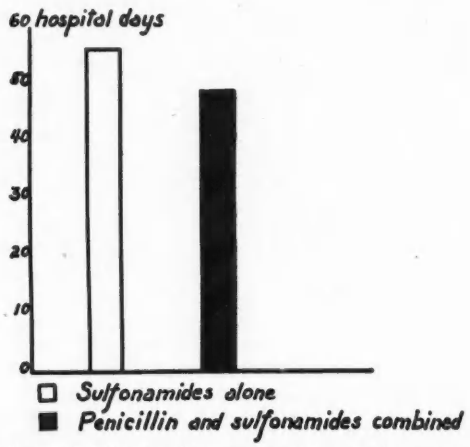

Figure 1.—Diagramatic representation of the average number of hospital days in 25 cases of staphylococcus osteomyelitis.

To compare the course of the disease as reflected by the elevations in temperature we made a composite chart of the average daily high and low temperature of these patients during their first two weeks of hospitalization. It reveals a considerable difference in the course of the disease in the patient treated with penicillin as compared with that in the patient treated with sulfadiazine. Both groups started out with approximately the same temperature level but while the fever of the group treated with the sulfonamides alone continued to fluctuate daily for the first week to about 101 degrees, that of the penicillin-treated group usually fell to a 99 degree level at the end of the third day. This striking difference between penicillin-sulfa therapy and sulfonamide

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treatment in influencing the duration of clinical signs of infection is best visualized on the accompanying diagram. It must be remembered that this composite temperature chart does not reflect the considerably greater individual variations in their response to the disease process. (Figure 2.)

Anderson *et al.*,[3] Altemeirer and Helmsworth [1] and others in studying cases reached this same conclusion regarding an effective shortening which penicillin produces in the number of days of elevated temperature.

Studies have been made of the effect of penicillin on the bone lesions as visualized by repeating x-ray films of the affected part. Altemeirer and Reinecke [2] found that a few of their cases with clinical signs of osteomyelitis and positive blood cultures did not show any bony changes. They believed they were justified in dividing their patients into two groups. In one group they felt penicillin therapy had been started early enough in the course of the disease to sterilize the blood stream before bone abscess and destruction took place, while in the other group the treatment had been delayed several days and it was their belief that this delay resulted in secondary changes observable in the roentgenograms of the bone involved. They suggest that the degree of bone destruction as visualized on the x-ray film depends upon how long the treatment has been postponed.

In our series we did not find this to be true. All of our cases eventually showed bone changes which were discernible by x-ray, even one case in which we believe penicillin was started on the first day of appearance of clinical signs of the infection. In the absence of bone changes which can be visualized on x-ray film it is difficult to judge whether the patient has osteomyelitis or merely a staphylococcic septicemia. In our cases bone changes are a requisite for the diagnosis of osteomyelitis. In the cases exhibiting more severe bone changes, rarefaction and absorption of the calcium salts continued for the first two to three months after the acute infection. This change was unaccompanied by any systemic evidence of infection, however, suggesting that it was not the result of a chronic bone infection but rather the continued absorption of bone damaged during the acute stage of the infection. After this variable period of time the x-rays reveal areas of decreased density and bone replacement, suggesting a healing of the bone.

It is difficult to compare the x-ray changes in cases treated by the penicillin-sulfa combination with those in cases treated with sulfadiazine. It can only be stated that on comparing them one gains the definite impression that the combination prevents severe bone lesions.

With this accumulating evidence indicating that penicillin has lessened the degree of bone damage and abscess formation, the question of the optimum time and necessity for surgical drainage is again raised. From a review of the literature on the problem one concludes that non-surgical intervention in the treatment of the bone lesion is becoming more desirable when the patient is under penicillin therapy. In the review of our series one of the most striking features is the sharp drop in the incidence of surgical intervention in the penicillin-treated group. In the group treated with the sulfonamides, 90 per cent had surgical intervention, with incision and drainage, or else decortication in one form or another and packing with vaseline gauze. In contrast, only 20 per cent of the penicillin-treated group had surgical drainage, and then only aspiration of the soft tissue accumula-

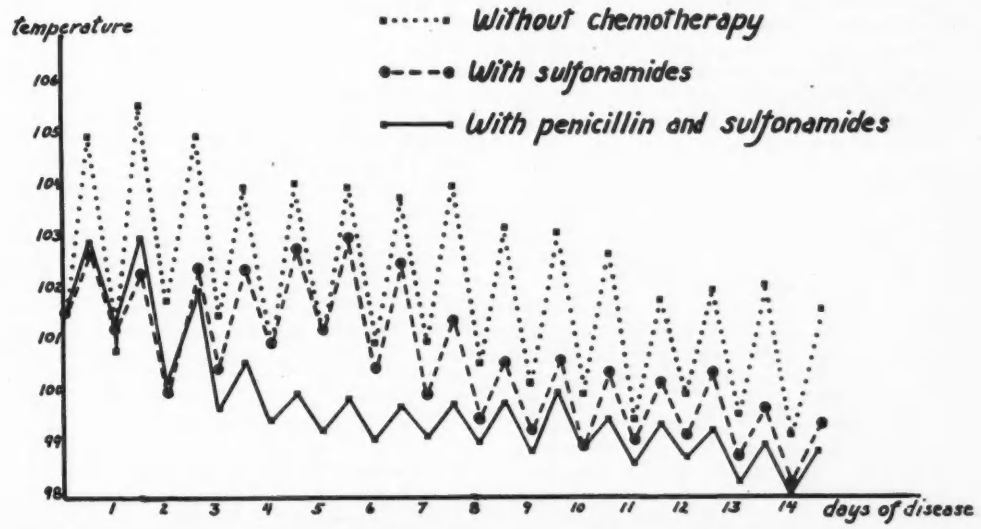

Figure 2.—Composite chart of the average daily high and low temperatures of osteomyelitis cases under different forms of therapy.

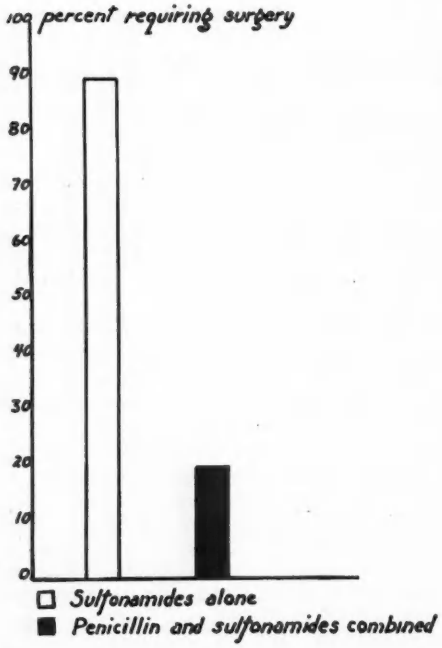

Figure 3.—Chart comparing the percentage of cases which had surgical drainage before and since the addition of penicillin to sulfonamide treatment of osteomyelitis.

tions of purulent material. A small incision for drainage of a soft tissue abscess was carried out in two cases. (Figure 3.)

A Stanford University group under Bloomfield [4] believes that adequate early arrest of the disease with penicillin will do away with surgery entirely.

Dickson [5] is perhaps the strongest supporter of early surgical drainage. He feels that one should produce an avenue of escape for entrapped purulent material in all bone abscesses where there is no evidence of continuing systemic infection and where there is definite evidence by x-ray of bone localization. Our series certainly indicates that with penicillin therapy few need surgery and we hesitate to institute any procedures which might introduce secondary infection until such become absolutely necessary. It has been our experience in treating these cases and deciding upon surgical intervention that several other important factors must be borne in mind.

The first of these in importance is the type of infection from which the patient suffers. Is it a septicemia with the bony lesion playing only a small part in the generalized process, or is it a localizing bone abscess following a transient bacteremia? In a certain number of the cases the infection is a generalized one with multiplication of the organism in the blood stream and secondary abscess formation in the bony, hepatic, pulmonary or other systems. Is it not unwise to operate and drain in such cases?

A greater number of cases of osteomyelitis have a transient bacteremia, with the development of a bone abscess during the first few days of the infection. Drainage of such an abscess, after the body has been able to control the initial stages of infection, may prevent its further subcortical spread and involvement of the shaft and thereby shorten the period of disability and destruction of the disease. X-ray changes showing increased density do not necessarily mean purulent accumulation. Soft tissue fluctuation is a better indication for drainage. The procedure might be incision of the soft tissues and decortication over the most destroyed area, suturing into the wound a catheter to maintain drainage and facilitate the instillation of penicillin locally each day, with closure of the incision by stainless steel retention sutures to prevent secondary infection.

Many fluctuant subcutaneous abscesses can be drained easily by aspiration, for with penicillin therapy the pus tends to be thin, rather than thick and filled with necrotic debris as is generally characteristic of staphylococcal infections. Should this procedure not suffice, further surgical measures can then be instituted.

Any comparison between the recurrences of infection and subsequent metastatic complications in these two groups must be postponed until there has been a considerable passage of time.

TREATMENT

If we expect to reduce the mortality rate in acute hematogenous osteomyelitis to less than 1 per cent and to keep the bone destruction at an absolute minimum adequate early treatment of the disease is essential. The following outline covers the major features of such treatment.

1. Complete examination with x-rays of the affected parts, plus a chest film.
2. A hemoglobin, red blood count, white blood count, and differential count on admission with the hemoglobin, white blood count and differential repeated every other day for the first week or for the duration of the acute stage, then once weekly.
3. Urine examination on admission and every other day during the acute stage, then bi-weekly.
4. Blood culture on admission and every other day until three cultures are negative.
5. Donors secured and blood matched. 150 to 200 cc. daily if indicated; at least once a week, depending on the hemoglobin level.
6. Penicillin, intravenous route if necessary, 400,000 units or more daily for the first day or two, then somewhat smaller dosage until the patient is well.
7. Sulfadiazine in adequate amounts to maintain a blood level of about 12 mgm. per 100 cc. of blood. A high dosage may be necessary to secure this blood level.
8. Positive fluid balance with adequate output of urine by use of intravenous fluids if necessary.
9. Immobilization of affected parts with splints, plaster, or traction, taking care to avoid injuring the skin with adhesive.
10. High vitamin diet with accessory vitamins by mouth or intravenously.

SUMMARY

A comparative study of the effectiveness of the sulfonamides alone and of the sulfonamides and penicillin combined in the treatment of 25 cases of hematogenous staphylococcus aureus osteomyelitis at the Children's Hospital, Los Angeles, is presented. It shows the expected mortality rate of penicillin treated cases of osteomyelitis should be less than 1 per cent; that the course of the disease as reflected by the temperature charts is considerably shortened; that the roentgenograms reveal less destruction in these cases and that the necessity for surgical intervention and drainage of bone abscesses has been markedly reduced.

An outline of the essentials for the adequate treatment of acute osteomyelitis is presented.

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Quinidine in Heart Disease, Particularly in the Older Age Groups*

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THE value of quinidine in the treatment of the acute cardiac arrhythmias seems to be well accepted. However, reports frequently appear in the literature emphasizing that it should be used only in the acute arrhythmias in young persons with no underlying heart disease and warning against its use in (1) patients in the older age group, (2) auricular fibrillation of more than three months' duration, (3) coronary sclerosis with fibrillation, (4) heart failure with fibrillation and (5) coronary thrombosis. Quinidine thus would be contraindicated in groups representing perhaps the majority of all cardiac arrhythmias.

The average age of the population in the United States is increasing. The latest statistical report shows that more than one half of our population is over 30 years of age.[16] On the Pacific coast the average age is higher than in any other section of this country.[15] The median age of residents is higher in California than in any other state. At 33 years it is more than three years higher than the median age for the nation as a whole. The life expectancy at birth among the policy holders of the Metropolitan Life Insurance Co. in 1945 is 65 years, 14 years higher than it was just 25 years ago. In the United States today, cardiac disease is the chief cause of death. A number of studies are being conducted on the causes and the prevention of various cardiac diseases. It is hoped that rapid progress in this field will be made. However, for the present we must be prepared to treat a constantly aging population affected with increasing numbers of cardiac disorders. That the medical profession is cognizant of this fact is evidenced by the recent appearance of a medical periodical restricted to geriatrics.

In our experience of many years we have found the greatest value of quinidine to be in the older age group. In our first clinical report,[22] 80 per cent of our successfully treated cases of auricular fibrillation were in patients 50 years of age or older. Since 1929 we have treated more than 500 cases of auricular fibrillation with a successful restoration to normal rhythm in about 70 per cent of cases. Of this percentage by far the greater part comprises cases in the older age group. Many of these patients were cardiac invalids materially benefited by the restoration to normal cardiac rhythm. Two of them had been successfully carrying on in their daily duties for ten years when last seen in 1942.

In most instances effort should be made to restore an irregular beating heart to normal rhythm. The cardiac output of a fibrillating heart is 15 to 79 per cent less than it is when the heart has been restored to normal rhythm.[3,11] Clinical and experimental studies show that the average difference is 20 to 30 per cent.[7,14] This is a considerable variation in cardiac efficiency. An irregular heart causes a slowing of the circulation and an increase in venous pressure. This leads to an overfilling of the heart. Thus a vicious circle is established.[6]

CASE REPORTS

CASE 1: A farmer, aged 72 years, had been reporting to the clinic for more than two months. His chief complaint was marked dyspnea, weakness, and swelling of the ankles and legs. He had been digitalized. The heart rate was 70 but the beat was irregular. Congestion rales were present in the bases

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of both lungs. The liver was palpable below the costal margin and there was pitting edema in both the legs and the feet. The patient said his heart had been "thumping irregularly" for about four years. Although he said he thought there had been some improvement since he began receiving treatment at the clinic, he could not carry on with limited activities. He had been given the usual treatment with digitalis but his heart was still in decompensation. A maintenance dose of digitalis was continued and quinidine was started. In a period of one week, after the daily dose of quinidine had reached 1.17 gm., his heart beat was restored to normal rhythm. The edema, dyspnea and signs of cardiac failure had disappeared. The patient was glad to boast that he had not felt so well in four years. His pulse continued regular and he carried on with his duties on his farm for at least the three ensuing years for which we have record of him.

This man, a cardiac invalid for many months, was restored to a useful existence, with the aid of quinidine, for a known period of three years. Digitalis alone was not sufficient. The restoration to normal rhythm increased the efficiency of the heart to spell the difference between a heart in failure to one in compensation. Cases of this type are not unusual. We had several. Askey [1] reported two striking examples of this kind. He heartily confirms our experiences in saying, "In certain instances its use has been life saving and has prolonged life for many months in a number of desperately sick patients."

There is another reason why an irregular heart should be restored to normal rhythm. The psychological effect of a fibrillation on a patient is often severe enough to prevent his carrying on with his daily duties. He is constantly aware of palpitation and abnormal cardiac rhythm. Even though the degree of cardiac decompensation be very little, such a patient often considers himself a potential cardiac invalid. In such cases particularly, most spectacular results may be obtained by quinidine therapy. Restoration to normal rhythm not only improves his physical well-being but usually improves his psychological outlook to the future. Many such cases have been successfully treated.

CASE 2: An automobile executive, aged 49 years had been treated with digitalis for fibrillation for several months. He had been unsuccessfully assured that since the fibrillation was slow there was no decrease in the cardiac efficiency. He was constantly aware of "palpitation" and was especially annoyed by it when he would read in the daily newspapers of the death from heart disease of a prominent citizen or an acquaintance. He confessed beginning failure to carry on his work efficiently and admitted concern with the distribution of his estate in case of his sudden death. He was a cardiac invalid. In less than one week with quinidine his heart was restored to normal rhythm after it had been fibrillating for six months. The change in him was remarkable. He was able to work; to do his job efficiently; to view life and the future without fear. The rhythm has remained regular now for one year. He is on daily maintenance doses of quinidine and digitalis. The underlying disease in this patient's heart is mild coronary sclerosis. He was told about it. Nevertheless, now that his heart is beating regularly, he is not continually heart conscious and fearful.

What other reasons are there for the limited use of quinidine in heart disease? They are the toxic symptoms and dangers so often attributed to its use. The most commonly mentioned are nausea, vomiting, diarrhea, vertigo, tinnitus, blurring of vision, emboli, cardiac standstill, and respiratory paralysis.

Emboli:

Our experience in the treatment of several hundred cases of auricular fibrillation and the experience of several other investigators [2,4,8,10,18] lead us to believe that the incidence of this complication has been definitely overemphasized. Emboli occur in cases of auricular fibrillation under treatment with digitalis and in those receiving no treatment whatsoever. Accidents occurring in these circumstances appear to be well taken by the treating physician and are considered "legal" if I may use the colloquial. However, as Korns [8] stated should an accident occur while the patient is taking quinidine, it becomes front page news.

Cardiac Standstill:

We had two cases of asystole complicating the use of quinidine. They were not fatal. Quinidine not only increases the refractory period; it also depresses the sino-auricular node. It is a cardiac depressant. Cardiac standstill complication may occur. We must remember that the use of digitalis is not without danger.[24] Excessive doses of digitalis too rapidly and over too long a period may cause auricular standstill, ventricular fibrillation, and sudden death.

Respiratory Paralysis:

Sudden deaths from the use of quinidine have been attributed to paralysis of respiration. Experiments on cats have shown that after lethal doses of quinidine have been given, respiration ceases one minute or more before the heart stops beating.[5] We corroborated this finding in dogs. However, it always required lethal doses of quinidine to obtain this result. It is quite possible, perhaps, for smaller doses to have the same effect.

Toxic Symptoms:

How may we avoid many of the so called toxic symptoms and dangers attributed to the use of quinidine?

Since 1932 I have repeatedly emphasized that most of the unpleasant complications were not due to the action of the drug per se, but rather to the method by which the drug was given.[20,22]

Quinidine is a potent drug. As with any potent drug used in the treatment of disease a better understanding of its pharmacological action, its behavior, and its effects not only lessen the dangers of its use but frequently enhance its therapeutic values.

It is well known pharmacologically that to avoid complications and toxic effects of any potent drug, a tolerance for the drug must first be established. To accomplish this, very small doses should be given at first and slowly and gradually increased.

In dogs, when the equivalent of a large dose of quinidine is given in divided doses, the concentration of the drug in the heart muscle is much less and remains over a longer period of time.[21] Experimental

and clinical studies lead us to believe our small dose method is not only more safe but more effective.

Patients treated by the small dose method[20a] rarely complain of the toxic symptoms so often blamed on the use of this drug. Digitalis must not be discontinued while giving quinidine. Some of the bad effects attributed to the action of quinidine are in some cases due to the lack of digitalis. Each works better when given with the other.[23]

Should quinidine be used in acute coronary occlusion, in acute heart failure with or without fibrillation?

There is considerable controversy about this problem. Morawitz and Hochrein[12] believed that their results were better in a group of acute cardiac conditions when 0.1 gm. quinidine was administered twice daily than they were in a control group not receiving quinidine. Our experiences lead us to corroborate these findings. We believe the dangers of ventricular fibrillation and sudden death are lessened by the prophylactic use of quinidine during the acute stage of heart failure.

Levine,[9] experimenting on cats, concluded that quinidine should be given to prevent sudden death, "in those conditions in which ventricular fibrillation is prone to occur."

Tying off the circumflex branch of the left coronary artery in dogs, Smith, McEachern, and Hall[13] found that the number of recoveries is much larger in the animals treated with quinidine than in the untreated animals. The mortality was 55 per cent as against 75 per cent.

Thomas and Harrison,[17] producing cardiac damage in rats by searing the surface of the heart, concluded that quinidine given subsequent to the production of myocardial injury caused a slight decrease in mortality.

Wegria and Nickerson,[19] in studying the susceptibility of the hearts of dogs to ventricular fibrillation induced by electrical shocks, found that quinidine reduced the susceptibility to ventricular fibrillation, but *only provided the dose of quinidine was not too large*, and provided it was *administered slowly*. When large doses were given rapidly, the susceptibility to fibrillation increased and spontaneous ventricular fibrillation frequently occurred.

SUMMARY

Quinidine is a valuable drug in the treatment of heart disease. The toxic symptoms and dangers so frequently attributed to its use have been overemphasized. It is our belief that many of these unpleasant complications are perhaps due to the method usually advocated for giving quinidine rather than to the drug per se.

By using the small dose method[20a] a better tolerance for the drug is established in the patient and the toxic symptoms and dangers so often attributed to it are frequently avoided.

Digitalis must not be discontinued during quinidine therapy.

The use of quinidine has been limited in the older age group of cardiac patients and in patients with chronic cardiac arrhythmias. It is these groups which are often in most need of this drug and in which frequently most favorable results are obtained.

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The Pharmacology of New Drugs Useful in Pediatric Practice*

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ALLERGIES of childhood are common, but not always responsive to treatment directed against the supposed etiology. Agents designed to reverse the pathological physiology, such as epinephrine, ephedrine, xanthines, atropine, and similar agents often afford temporary relief but do nothing about the mechanism initiating the physiological lesion. Histamine has long been suspected as the effective end product of a series of chemical reactions beginning with the antigen-antibody reaction of true allergy, or the tissue injury in "physical allergies," which are thought to release histamine from histidine or from preformed combined histamine of the cells. Failing to prevent the formation of histamine, theoretically, the next most desirable therapeutic or prophylactic measure would be one which would prevent the reaction of histamine with the cell, as atropine prevents the reaction of the cell with acetylcholine. Many compounds are now known which have this effect. Several reviews of these drugs have been published, the most recent coming to my attention being the critical review of Hartmen[11] in CALIFORNIA MEDICINE. Therefore, only the relation of the pharmacological data to clinical experience will be pointed out.

BENADRYL AND PYRIBENZAMINE

Chemically, the antihistaminic drugs are of two classes. One class, illustrated by the original antihistaminic compound 929 F of Fourneau[2] of the Pasteur Institute and by Benadryl (beta-dimethylamino benzhydril ether HCl) are aromatic ethers of dialkyl ethyl amines; the second class incorporates the large number of antihistaminic substances used clinically and are aromatic derivatives of dialkyl ethylenediamines. Pyribenzamine is of the second class, as are also Antergan and Neoantergan of the French products.[3]

The antihistaminic properties of this class of drugs was discovered in the course of routine testing for spasmolytic properties. The isolated intestine is a classical test object for the study of spasmolytic drugs; the isolated ileum of the guinea pig is most sensitive to histamine[1] and affords a simple biological method for preliminary surveys of the presence of histamine in tissues and body fluids,[4] as well as of drugs which counteract the effects of histamine. Histamine in a concentration as low as 1:10,000,000 in the saline solution (usually Tyrode's solution) in which the strip of ileum is immersed causes strong contraction of the muscle coats. Such a contraction is antagonized by both Benadryl and Pyribenzamine in concentrations of 1:10,000,000 to 1:50,000,000.[16] Higher concentrations of Benadryl or Pyribenzamine antagonize acetylcholine and barium ion effects, hence the blocking of histamine action is only relatively specific.

A more dramatic demonstration of the antihistaminic effects of drugs of this type is the prevention of asthma in guinea pigs exposed to an atmosphere into which a solution of histamine has been nebulized. One part of histamine in 10 billion parts of air (0.1 microgram per liter) will cause a severe asthmatic attack in the guinea pig; the injection of 0.1 milligram of Pyribenzamine[17] or 10 milligrams of Benadryl[14] per kilogram body weight protects the guinea pig for two hours or more. These drugs also protect guinea pigs and dogs against bronchospasm produced by injections of histamine, or by anaphylaxis produced by protein to which the animal has been sensitized. In these instances also, Pyribenzamine is from 10 to 500 times more potent than Benadryl.

OTHER ANTAGONISMS

Benadryl and Pyribenzamine have been found to antagonize almost every effect of histamine; these include the hypotensive action of histamine,[15,21,24] the production of skin wheals,[9,13] contraction of the nictitating membrane,[25] the increase in salivary flow,[25] and the contraction of the uterus of the guinea pig.[3] The rat uterus is inhibited by histamine. This effect also was antagonized by Pyribenzamine in our laboratory but since Pyribenzamine alone causes contraction in doses which antagonize histamine, this may not represent the true antihistaminic action.

MECHANISM OF ANTIHISTAMINIC ACTION

The antihistaminic action seems to be based upon a competition between the drug and histamine for attachment to some cellular constituent, probably an enzyme, which is activiated by unopposed histamine.[24] A well known antagonism of this type is that between sulfanilamide and para-aminobenzoic acid. In support of this interpretation is the experimental demonstration that these drugs do not inactivate or destroy histamine chemically, they do not augment the action of the histamine destroying enzyme called histaminase, and they do not interfere with antigen-antibody reactions related to anaphylaxis and clinical allergy.

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CLINICAL APPLICATION

Clinical experience with Benadryl and Pyribenzamine is surprisingly at variance with laboratory experience. The anticipated value in treatment of asthma did not materialize, for not more than one-fourth of the cases of asthma are relieved by use of these drugs. On the other hand, in the laboratory there is only partial protection against histamine-produced urticaria, while clinically these drugs exhibit their most powerful effects against acute urticaria and angioneurotic edema, especially against penicillin urticaria. Another discrepancy between the laboratory and the clinic is that in patients, Pyribenzamine is apparently no more potent than Benadryl, whereas the former is many times more active than the latter in opposing experimental histamine asthma. Both drugs tend to depress the central nervous system in patients, but toxic doses in animals produce convulsions, followed by coma. In patients, depression of the leukocyte count has been reported but this has not occurred in laboratory animals.

PHARMACOLOGY OF PRIVINE

Whereas abundant laboratory experiments preceded the introduction of antihistaminic drugs for clinical use, Privine Hydrochloride was scarcely known to pharmacologists before it had had extensive clinical trial. Chemically, Privine is 2-naphthyl-(1′)-methyl-imidazoline hydrochloride. During the last three years, however, Ciba Pharmaceutical Products, Incorporated, has supported research on this product, first at Wayne University College of Medicine,[5,6] and subsequently in the company laboratories,[26] with the discovery of many interesting pharmacological properties of the drug. Privine seems to combine sympathicotropic (adrenergic), parasympathicotropic (cholinergic), and musculotropic actions. It elevates blood pressure; the effect is diminished, but not abolished nor reversed, by yohimbine, ergotamine, or 933 F. Cocaine does not potentiate the action of Privine. By contrast, the true sympathicotropic agent, epinephrine, is potentiated by cocaine, and its pressor effect is reversed to depressor by ergotamine, yohimbine, or 933 F. Privine differs from amphetamine and ephedrine in that it exhibits little tachyphylaxis; that is, repeated intravenous doses continue to produce their pressor effects. Other sympathomimetic effects of Privine are vasoconstriction of nasal mucosa, mydriasis, and inhibition of intestinal motility. Here, however, the sympathomimetic effects end. Perfused bronchioles are not relaxed; the uterus of the guinea pig is contracted rather than relaxed, and coronary flow is decreased rather than increased. A cholinergic effect in the salivary glands is demonstrated by the fact that Privine stimulation is opposed by atropine, and Privine seems to have both an adrenergic and a cholinergic effect on the nictitating membrane of the cat, for either yohimbine or atropine decreases the contraction caused by Privine.

Animal experiments on the toxicity of Privine indicated a high therapeutic index in that a few micrograms of the drug caused a definite elevation of blood pressure, whereas the fatal dose was well over 1 milligram per kilogram of body weight.[5] However, animal experiments failed to explain the occasional depression following administration of Privine intranasally to children. Much experimental work is required to explore the field of action of this interesting drug and of its therapeutic possibilities and dangers.

BAL

British investigators found in dimercapto-propanol an agent effective against the arsenical blister "gas" lewisite.[18] Since this discovery during the war, the substance has been known as British anti-lewisite, or briefly, BAL. This drug is supplied as a solution in oil by Hynson, Wescott and Dunning. The dose is 0.025 cc. of the 10 per cent solution (2.5 milligrams) per kilogram body weight. This is administered every four hours the first day or two, and then two injections per day are given for ten days or until recovery is complete.

After its protection against arsenical poisoning associated with lewisite[23] became known, dimercapto-propanol was tested as an antidote against various arsenicals, including arsphenamine and oxophenarsine. Its clinical effectiveness against poisoning by antiluetic drugs has been reported by Eagle and Magnuson.[7] Because the antidotal properties of BAL are thought to be due to the sulfhydril (—SH) radical, it has been tried experimentally in poisoning by mercury, lead, cadmium, antimony and a number of other metallic poisons known to react with sulfur to form insoluble compounds, as does arsenic.[8,22] That factors other than the simple reaction between sulfur and the metal are involved is shown by the fact that BAL is highly effective against mercury, but not against lead, and only slightly against antimony and cadmium. It seems to be of some value against poisoning by gold as used in treating arthritis.

Dimercapto-propanol has taken much of the terror out of poisoning by ant paste containing arsenious oxide, or by corrosive sublimate. However, it does not supplant the first aid measure of washing out the stomach and the administration of saline purgatives to remove unabsorbed poison from the digestive tract. It does, however, seem to inactivate absorbed arsenic or mercury and hasten their excretion. Present experience indicates that the recommended dose of dimercepto-propanol is without danger; it sometimes causes giddiness, sweating, nausea and headache.

SULFAMETHAZINE

Sulfadiazine was a distinct advance in the development of sulfonamides with respect to three important criteria, rate of absorption, rate of excretion, and rate of acetylation. Each of these factors was further improved by methylating the pyrimidine nucleus of sulfadiazine to form sulfamerazine, and now a second methyl radical has been added to form sulfamethazine, which is the most rapidly absorbed

and most slowly acetylated and excreted of the series. This improvement in the pharmacology of the sulfonamides accomplishes two important results: (1) the therapeutic concentration of sulfamethazine in the blood is more quickly reached, and more prolonged, and (2) the incidence of crystalluria is reduced. The crystalluria is reduced not only because of the slower formation of acetylsulfamethazine, but also because acetylsulfamethazine is more soluble than the acetyl-derivatives of other sulfonamides used clinically. The antibacterial potency seems equal to that of sulfadiazine. Although animal experiments indicate no greater toxicity than with sulfadiazine, conclusions concerning clinical toxicity must await more extensive clinical experience.

The table compares in a general way some of the pharmacological relations.

	Absorption	Acetylation	Excretion
Sulfadiazine	3-4 hr.	40%	10 hr.
Sulfamerazine	2-3 hr.	25%	15 hr.
Sulfamethazine	1½-2 hr.	10-20%	18 hr.

CURARE

Curare, the South American arrow poison, remained a pharmacological curosity and physiological tool until the industry and scientific interest of Richard Gill established the true botanical source and methods of preparation of the crude drug.[10] A biologically standardized mixture of alkaloids has proved to be of practical value in reducing the dangers of metrazol and of electroshock therapy of psychoses, in bringing about muscular relaxation during nitrous oxide, ethylene, and cyclopropane anesthesia, and in reducing spasticity in poliomyelitis and in spastic paralyses caused by upper motor neurone lesions. Finally, one of the most active alkaloids, d-tubocurarine, has been synthesized and is now available for clinical use.

MODE OF ACTION

Curare alkaloids have two types of pharmacological effect—production of strychnine-like convulsions and myoneural junction paralysis. With preparations employed clinically, only the paralytic effect is seen; the convulsive effect is, however, characteristic of certain galenic preparations tested in our laboratory, but the constituent responsible is not known.

It is the paralytic action which is of therapeutic value. By careful adjustment of dose, undesired muscular tension can be diminished or abolished, without interfering with desired voluntary movement and respiratory activity.[19,20] However, this ideal situation is not always obtained; respiratory muscles may be paralysed. It is important, therefore, to have at hand means of resuscitation, particularly oxygen and mask, and neostigmine methylsulfate injection. Neostigmine (Prostigmine) opposes the paralytic effect at the myoneural junction, by interfering with the destruction of acetylcholine. The exact relation of curare alkaloids to acetylcholine synthesis, action, and destruction is not clear, but present opinion is that it interferes with the synthesis rather than the action.

ADMINISTRATION

In anesthesia and as a corrective in shock therapy, curare is administered intravenously. The action develops within a few seconds, and because of individual variation in susceptibility, the injection should be made slowly over a period of 30 to 90 seconds to avoid overdose. Duration of action from the intravenous administration is 15 to 90 minutes.

In the treatment of spastic diseases, d-tubocurarine hydrochloride is suspended in peanut oil containing 4.8 per cent white wax. The concentration of d-tubocurarine hydrochloride is 3 per cent, so that 1 cc. contains 30 milligrams of the drug. This suspension is administered intramuscularly or subcutaneously in a dose of 0.4 to 2.5 cc. two to four times weekly.

CONTRAINDICATIONS

Curare must not be used in myasthenia gravis or other myasthenic states. Since the alkaloids are excreted by the kidney, its use in the presence of renal disease is contraindicated or should be attempted with caution.

TYROTHRICIN

The concept of antibiotic substances is as old as the science of bacteriology, for Pasteur in 1877 observed inhibition of growth of anthrax by certain air born microorganisms and suggested therapeutic possibilities of this phenomenon.[12] Kolmer mentions other early instances of recognition of the antibiotic principle and attempts at therapeutic application, such as the discovery of the antagonism of Staphylococcus aureus for the diphtheria bacillus and of Pseudomonas pyocyanea for a number of microorganisms, during the first decade of the twentieth century. Yet when Fleming made his observations on Penicillium notatum, in 1929 to 1932, our minds were not ready for the practical development of the idea. It seemed to require the impetus of the discoveries of Dubos and his collaborators regarding the antibiotic properties of soil bacteria, and especially of Bacillus brevis in 1931 and subsequent years, out of which tyrothricin was developed, to prepare our minds for the acceptance of penicillin.

SOURCE AND CHEMISTRY

The original material obtained by Dubos from Bacillus brevis was found effective against gram-positive cocci and was called Gramicidin. It was soon discovered that the original gramicidin was composed of two substances, one effective against both gram-positive and gram-negative bacteria. This latter fraction was called tyrocidine. The material effective against only the gram-positive organisms retained the name gramicidin, and the mixture of the two is marketed under the name Tyrothricin.

Gramicidin and tyrocidin are both thermostable polypeptids, insoluble in water but soluble in alcohol.

ABSORPTION

Tyrothricin is poorly absorbed from the gastrointestinal tract, as well as from wound surfaces and

mucous membranes, since systemic effects are not observed from such administration. It is, however, absorbed from subcutaneous, intramuscular and peritoneal injections.

SYSTEMIC EFFECTS

When administered intraperitoneally, tyrothricin has been shown to possess antibiotic properties in vivo. However, the therapeutic index is small, since it produces hemolysis, and repeated injections have produced degenerative changes in many viscereal organs of experimental animals.

METHOD OF ADMINISTRATION

Because of toxicity from parenteral injection, administration is limited to topical application.

The alcoholic solution supplied by the manufacturer is diluted with distilled water (saline causes a clumping and precipitation) to form a colloid suspension of usually 20 to 50 milligrams per 100 cubic centimeters. This is used for irrigating and as a wet dressing.

CLINICAL USE

Tyrothricin is of greatest value as a wet dressing for infected surfaces where gram-positive cocci are involved. Open, infected wounds, such as traumatic injuries to soft tissues, infected burns, osteomyelitis, opened paranasal sinuses or mastoid cells respond well to treatment with tyrothricin. When used as an irrigating fluid, or as drops for the nasal passages, good results have been reported, but since contact with infected tissue is of such short duration, and since continued contact of the agent with the infecting agent is required for bacteriostatic action, the role of the antibiotic agent as used in this way is of doubtful significance. This statement might also apply to reported benefits in the infections of the conjunctiva. However, the mechanical factors here are different from those in the nose, and are in favor of prolonging contact of the antibiotic agent with the infecting organism.

STREPTOMYCIN

Streptomycin is a thermostable, water soluble, nitrogenous base, obtained from Streptomyces griseus. The hydrochloride salt is the form dispensed for clinical use. In the dry form streptomycin or its hydrochloride may be stored at room temperature (up to 85 degrees F.) for a year without loss of potency. Sterile aqueous solutions may be kept in the refrigerator for one week. Autoclaving destroys more than half the potency. Like so many of the new antibiotic materials obtained from microorganisms, it is for all practical purposes nonabsorbable from the alimentary tract, but well absorbed when injected intramuscularly. Efforts to delay or prolong absorption, as with oil and wax, have thus far failed. Therefore the aqueous solution is employed most generally. Excretion is rapid, so that, as with penicillin similarly administered, the blood concentration falls rapidly. Injections every two to four hours are required.

The dose was at first expressed in units, but since streptomycin is now produced in a chemically pure form, the concept of units is important only in relation to assay of the concentration of streptomycin in the blood, during administration. One milligram of streptomycin is equivalent to approximately 1,000 units. The usual daily dose varies from 0.3 to 1 gram.

TOXICITY

Animal tests gave evidence of unusually low systemic toxicity, both acutely and chronically administered. However, during clinical trial it became apparent that the auditory apparatus, especially the eighth cranial nerve, is sensitive to a deleterious effect of streptomycin, and that partial or complete deafness occurs in many patients. Prodromal symptoms are low pitched tinnitus and vertigo. As yet, no explanation of this specific nerve sensitivity has come to my attention.* Whether other nerves may be injured is not clear; at least one case of intractable hiccough is known to have followed the use of streptomycin. The casual relation, however, was not proven.

Allergic reactions occur, and sensitization may develop, although it is unusual. In experimental animals, renal injury has been produced by massive dosage; this may explain the occasional appearance of casts in patients undergoing streptomycin therapy. Alkalinization of the urine prevents formation of these casts.

CLINICAL APPLICATION

Clinical infections with Pasteurella tularensis (tularemia) yield to streptomycin therapy with remarkable rapidity. Other bacterial diseases which may be considered as indications for streptomycin therapy are those due to Hemophilus influenzae, Eberthella coli, Proteus vulgaris, Klebsiella pneumoniae, Aerobacter aerogenes, Pseudomonas aeruginosa, and the various Salmonellae. Urinary tract infections, meningitis, peritonitis, or bacteremia caused by these organisms often respond well to the administration of streptomycin. In urinary tract infections, the efficacy of treatment is increased by alkalinization of the urine.

The tubercle bacillus in vitro is quite susceptible to streptomycin, and almost every type of clinical tuberculosis has been the object of streptomycin therapy. The greatest benefits reported are with miliary tuberculosis and localized lesions of the upper respiratory tract; tuberculous meningitis responds for a time to streptomycin, but relapse is the rule.

* After this paper was in press, there appeared an article by Lewis D. Stevenson, et al. (Proc. Soc. Exper. Biol., & Med., 65:86-88, May, 1947) describing degeneration of cells of the ventral auditory and vestibular nuclei in the pons.

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Vector Potentialities with Respect to the Spread of Insect-Borne Diseases of Man in California

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TOWARD the end of World War II when American military personnel were beginning to return to the mainland from the Pacific and CBI theaters of war, many for hospitalization, there was considerable apprehension that exotic diseases might thus be introduced into the United States. After V-J day with greatly increased numbers of troops returning from these areas, authorities fully expected severe epidemics, particularly of exotic strains of malaria. Public health officials feared that virulent foreign strains of not only malaria but also other infections might be introduced by infected persons themselves as well as by infected exotic insect vectors as "riders" on airplanes and ships. The most likely invaders would certainly be parasitic infections, and among these, exotic diseases traceable to certain protozoal, rickettsial and helminthic parasites and viruses transmitted by insects and their kin such as ticks and mites.

Never before had the vector problem loomed so prominently the world over. California appeared to be highly vulnerable because of its exposure to the Pacific and particularly because it was feared its climate might be inviting to tropical and sub-tropical infections as well as to their appropriate vectors. It was important then and is of importance now to know what vectors or potential vectors present in California might lend themselves to the spread of parasitic infections if newly introduced. Also what are the potentialities of foreign vectors?

It is a noteworthy fact that there have been no consequential epidemics traceable to returning military personnel. Interceptions at quarantine barriers of dangerous vector insects were numerous. It has been pointed out on other occasions that this situation was due to the vigilant cooperation between the Army, Navy and the Public Health Service through the Inter-Departmental Commission which set up effective barriers to prevent the introduction and spread of noxious and vector insects and disease reservoir animals. In this matter the Navy carried a heavy burden. War-time quarantine measures were not only designed to protect our military personnel but also to give protection to the civilian population. Everyone concerned with this type of work was on his toes during the wartime emergency. Disinsectization of aircraft became a matter of serious concern. It is time again that we were reminded of our responsibilities in relation to the possible introduction of unwanted vector insects and exotic diseases either by means of aircraft or ocean vessels.

We were mightily concerned about such matters, during the latter part of the war and early post-war period. We should not tolerate an easing up now. Troop movements are now a very minor matter compared with our increasing commercial traffic with the Pacific Islands and the Orient. High levels of efficiency must be maintained at our quarantine barriers in Hawaii (where quarantine has always received strict attention), at those on more remote island frontiers, and particularly at our California ports (air as well as sea).

It is pertinent to point out that more than 99 per cent of the army hospitalizations listed under incidence of tropical diseases in World War II were insect borne infections (see Chart 2 on page 7, *American Journal of Tropical Medicine*, January, 1947). Insect borne diseases listed were malaria (460,872), dengue (84,090), sandfly fever (12,434), scrub typhus (6,861), filariasis (2,151), leishmaniasis (307), and relapsing fever (220). It is also a well established fact that much of the incidence of the dysenteries was traceable to flies, particularly to the blow fly, *Chrysomyia megacephala*, a potent food contaminator and an insect which we should very much dislike having introduced into California.

Few threats to the health of the Americas have equalled that of the invasion of Northeast Brazil by *Anopheles gambiae* in 1930 via Natal from Dakar, Africa, resulting in a huge toll of malaria. The introduction of *Aedes aegypti*, the yellow fever mosquito, at a much earlier date also from Africa is its only rival. The introduction of *Anopheles gambiae* almost certainly by fast moving mail-carrying French destroyers resulted in 5,513 malaria deaths in 1938 and 1939 and more than 185,000 persons in the invaded area under treatment for malaria. It cost considerably more than $2,000,000 to eradicate the invader and in 1943 the presumably "eradicated" invader made a comeback. This species had found optimum habitat conditions in that portion of Brazil which made eradication a serious matter.

As already stated there have been numerous interceptions of dangerous insects by our federal quarantine services, agricultural and public health. Our California shores must never be invaded by such dangerous exotic insects. It is worth pointing out that neither *Anopheles gambiae* nor *Aedes aegypti* have gained a foothold here; however, the latter has been intercepted many times. We may be fortunate in having an *unfavorable* climate for *Aedes aegypti*. Otherwise, were it successfully established, we might have dengue fever sweep over the state at intervals, as it does in several states where this mosquito abounds.

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We have no mosquitoes in California which can compare with either *Anopheles gambiae* or *Aedes aegypti* in domesticity, an important factor in maintaining constant and close contact between a disease vector and its host, hence of great importance in disease transmission. However, it is conceivable that an insect with a high degree of domesticity may have low potentialities in the chain of infection. An insect may very successfully receive the pathogen from a human source or reservoir animal within its associational complex, *i.e.*, it may possess a high infection potential and yet may not be successful for various reasons in passing on this infection to man or other animal hosts. It may be said, then, to have a low transmission potential. Experimental laboratory infections may be high, but for environmental reasons largely, transmission in nature may be low. What, then, does make an arthropod a good natural vector? A simple answer to this question as it applies to arthropod vectors in general is exceedingly difficult, because of the many factors involved. The question becomes less difficult if applied to anopheline mosquitoes. The answer has been given that "Any anopheline species will be an important natural vector of malaria if at any time in any area it repeatedly takes human blood, meanwhile surviving natural hazards in sufficient numbers and sufficiently long to permit a measurable malaria sporozoite index to develop." Temperature may play an important role and result in anophelism *without* malaria.

MALARIA VECTORS

Our California malaria vectors, *Anopheles* species, of which there are four, fortunately do not have a high degree of domesticity and are preponderately zoöphilous. *Anopheles maculipennis freeborni* is more commonly found in dwellings than the others and is our only important vector of malaria, yet precipitin blood tests show that most prefer blood of cattle, only 3-5 per cent feeding on human blood. It occurs principally in our great Central Valley where it breeds primarily in sunlit seepage pools, often associated with irrigation. *Anopheles punctipennis*, though state-wide in distribution, is regarded as a weak vector and then only in the Western Sierra foothill counties. It breeds principally in quiet, shaded pools adjacent to smaller receding streams. It does not readily enter human habitations, but is regarded as a porch biter. It bites man readily. *Anopheles pseudopunctipennis franciscanus* has also a statewide distribution in California and because of its abundance might be a formidable vector except that it does not bite man freely and does not invade human habitations. *Anopheles maculipennis occidentalis* hugs the coast, being found most commonly in a narrow strip close to the Pacific where cool climatic conditions do not favor development of malaria oöcysts. It feeds well on man in the laboratory, but in nature does not invade human habitations freely. All four of these anophelines have been tested for susceptibility to foreign malarias by the United States Public Health Service (see *Journal of the National Malaria Society*, Dec., 1945, pp. 307-329) and all proved to be susceptible to infection by relapsing soldiers infected with *vivax* malaria from the South Pacific. Feeding habits, domesticity and climate of natural habitats, of course, govern the relative importance of the species in nature. There are many parts where there is "anophelism without malaria" which emphasizes the wastefulness and futility of nonspecific anopheline control operations as a means of malaria control. Full knowledge of the specific vector (particularly its ecology) enables us to protect ourselves intelligently and economically. *Species sanitation* implies that the control measures, if any are necessary, must fit the particular offending species. Practically all parts of California where dangerous anopheline mosquitoes occur are now protected by well organized "Mosquito Abatement Districts" and the State Department of Public Health provides subventions under a special act of the State Legislature and by inspections and special training courses keeps these districts at a high level of efficiency.

DENGUE AND OTHER VIRUS VECTORS

The yellow fever mosquito, *Aedes aegypti*, referred to above as not present in California, is a potent vector of several virus infections among them *yellow fever* and *dengue* in nature and arthropod borne virus encephalitides experimentally. As already stated, this mosquito has been intercepted at our seaports on many occasions, both in the larval and in the adult stages. Although there is little reason to fear that it may yet gain a foothold here, our safeguards must not be lowered; it does occur in Lower California and is a common species in many of our southern states. Another potent vector of dengue and of yellow fever experimentally is *Aedes albopictus*, also absent here, but common in Hawaii, the Philippines, North Australia, parts of the Orient, and many islands of the Pacific. Day-biting *Aedes* species of mosquitoes native to California, though fierce biters, lack the marked domesticity that is shown by the two virus vectors referred to above. We must not be too sure that dengue fever epidemics cannot occur in California simply because of the present lack of a suitable vector.

The spread of the *arthropod borne virus encephalitides* (*e.g.*, St. Louis and Western Equine Encephalomyelitis) is a different matter. Here we have experimental as well as ample field evidence incriminating several local species of mosquitoes, principally *Culex tarsalis* and *Culex pipiens*, both of which were until recently regarded as purely pest mosquitoes and of no public health importance. It is no longer tenable to draw a sharp line between pest mosquitoes on the one hand and vectors on the other. Even those species which seldom *enter* human habitations, but *feed* on wild and domestic mammals and birds may be drawn into the general epidemiological picture. Certain domestic and wild birds are proven temporary hosts of these viruses. In such cases the

feeding habits of vector mosquitoes (which are nocturnal) must comprehend birds, horses and man. Among the several laboratory incriminated species (and there are a dozen or more) the two species listed above fit the conditions excellently; they are abundant, widespread, feed on human, equine, and avian hosts, and invade human habitations freely. We do have a formidable situation on our hands and the State Department of Public Health is fully aware of this and is proceeding accordingly.

Japanese B virus encephalitis continues to cause considerable concern. This infection is endemic in Japan, Okinawa and adjacent territories where the principal natural vectors are *Culex tritaeniorhynchus* and possibly *Culex pipiens pallens*. The former does not occur in California. The infectibility of this virus to California species of mosquitoes has been studied experimentally. It must be concluded that with various species of mosquitoes implicated as vectors of encephalitic viruses and others decidedly under suspicion, health authorities, as already pointed out, cannot with accuracy divide mosquitoes into two distinct groups, namely, vectors and non-vectors (pest mosquitoes). For this reason it is wise to insist on a thorough program of mosquito *control* wherever human populations warrant public health action.

Furthermore in considering the encephalitides the fact must not be overlooked that *Russian spring-summer type of encephalitis* is transmitted to man by ticks (*Ixodes persulcatus*). We have in California numerous and widespread members of the genus *Ixodes*. Local vector implications are not known.

While *sandfly fever* accounted for 12,434 army hospitalizations, the danger of establishing this virus infection in California is probably very slight primarily because of the paucity of potential vector insects, namely, *Phlebotomus* flies, also known as sand-flies (*Phlebotomus*). Two species have now been described from this state, namely *Phlebotomus vexator* from Contra Costa County, and *Phlebotomus stewarti* from Kern County and Alameda County. Both foci are small and little is known about their feeding habits, other than that blood-filled females of *P. stewarti* have been collected in burrows of ground squirrels and field mice.

Sand flies are very tiny, most of them 1½ to 2 mm. in length, and quite delicate, very susceptible to the usual aerosols used in disinsectization.

FILARIASIS VECTORS

It has been reported that approximately 2,500 men in the Army and a somewhat greater number of men of the Navy and Marines became infected with *Wuchereria filariasis* in the South Pacific Area where the principal vector mosquito is *Aedes scutellaris pseudoscutellaris*, a day biting species. Well over 30 species of mosquitoes have been experimentally proven to be susceptible to filarial infections. Very few servicemen have shown microfilariae in the circulating blood, an essential factor in mosquito transmission of filariasis. Therefore, establishment of this disease through Army and Navy personnel on this coast is not probable, even though suitable vectors are present. The South Pacific vector named above is absent here, but experimental evidence indicates that several of our local species could lend themselves as vectors. It is of great importance to bear in mind that we do have an abundance of *Culex quinquefasciatus* particularly in the southern end of the state, and that species is an important vector of filariasis in many parts of the Pacific region. This again emphasizes the importance of excluding or circumscribing human carriers (persons having microfilariae in their blood) originating in endemic regions, and as for other infections already mentioned, in supporting general mosquito control operations here.

Actually nearer at hand is the nodular filarial infection known as *Onchocerciasis* principally of the Pacific slope of Guatemala and Mexico. In Africa the infection occurs commonly in the Congo basin. More serious than the skin nodules caused by *Onchocerca volvulus* is the eye involvement in from 5 to 20 per cent of the cases, sometimes causing blindness. This filarial infection is transmitted from man to man by means of black flies (*Simulium*) which breed in swift flowing upland creeks. They are day biting insects. While proven vector species do not occur in California, we have over a dozen species of black flies, some of which attack man. Whether or not any of our species can serve as vectors needs to be determined experimentally. It should be pointed out, however, that a part of the projected route of the Pan American highway may be through endemic areas of the infection. It will be well for our public health officials and particularly quarantine officers to keep a weather eye on the onchocerciasis situation to the south of us.

The filarial worm, *Loa loa*, also known as the African eye worm, causing fugitive swellings (Calabar swellings) is transmitted in the African Congo by *Chrysops* flies (known here as deer flies) belonging to the horse fly family (Tabanidae). The symptoms of this form of filariasis may not appear until three to four years after infection. The author has observed a case in California showing fugitive swellings in a person having been in the African Congo. Whether our *Chrysops* species are tolerant to this infection is not known. Even though this were true there would probably be no public health menace because of the scarcity of human sources of infection and the small chance of a *Chrysops* fly biting two different persons.

RELAPSING FEVER VECTORS

There were 220 Army hospital admissions for relapsing fever during World War II as shown in the list of diseases referred to earlier in this paper, although it was not specified whether their infection was louse borne (epidemic) or tick borne (endemic). The causal organism common to both infections is generally referred to as *Borrelia (Spirochaeta) recurrentis*. However, in cases of the tick borne infection, the pathogen commonly takes the

specific name of the tick *(Ornithodoros)* vector, e.g., *Borrelia turicatae, Borrelia venezuelensis, Borrelia hermsi,* etc., largely because there appears to be a high degree of tick-host specificity or fastness. In California, relapsing fever is transmitted by *Ornithodoros hermsi* and *O. parkeri,* the former at elevations of 5,000 to 8,000 feet and the latter at lower elevations. *O. hermsi* favors chipmunks, which are reservoir animals of the infection. Several species of squirrels such as the tamarack are also hosts and likewise harbor the spirochaete. Infection may occur through the broken skin by contact with blood from these animals, whence the early name of the disease, namely "squirrel fever." Man, however, as well as other susceptible animals, becomes infected in nature usually by tick bites. As in Rocky Mountain spotted fever the infection is passed on from the female tick to the offspring through the eggs (transovarian contamination) so that one may become infected by the bite of female and male ticks as well as by any of the immature stages. Chipmunks frequently establish their nests in summer cabins in mountain resort areas and the ticks may thus infest the cabins. Since the ticks are only present on the body of the host animal for feeding purposes (a very short period—15 to 25 minutes), the expulsion of the chipmunks results in a lot of hungry ticks ready to feed on the human residents. Also, since these ticks are able to survive many months without feeding, summer resorters may suffer infection not only after a cabin has been closed all winter, but even after much longer periods of vacancy. It must be borne in mind, however, that these ticks in all active stages may feed on other non-human inhabitants of vacated cottages, such as wood rats, mice and even bats.

Other strains of relapsing fever occur in Central America, Mexico, and elsewhere, hence we must be on our guard against the introduction of soft ticks *(Ornithodoros* spp.) and, of course, infected reservoir rats and other reservoir hosts, particularly their tick parasites not now in this state.

VECTORS OF SCRUB TYPHUS

There were 6,871 army hospitalizations for tsutsugamushi fever (scrub typhus) as shown by the table previously referred to. Caused by *Rickettsia orientalis,* the infection is transmitted to man from rodent reservoirs (field mice) by certain species of chigger mites *(Trombicula)* endemic to the South and Southwest Pacific areas. As in relapsing fever, scrub typhus infection is passed on from the female mite through the egg to the offspring *(transovarian).*

We are fortunate not to have widely distributed or even severe foci of chigger mites on this coast north of Mexico, although a more careful survey may reveal a wider spread of *Eutrombicula alfreddugesi.* As a matter of fact, knowledge concerning mites affecting man and beast in California is very meager. Scrub typhus is a dangerous disease and we must spare no effort to keep it out of California.

CHAGAS DISEASE VECTORS

Chagas disease, the causal agent of which is *Trypanosoma cruzi,* an endemic infection of man in regions to the south of us, presents another serious problem that should give us some concern. We already have suitable vectors as well as reservoir animals both of which have shown infections in nature. Infected bugs, *Triatoma protracta,* have been found in four or five localities in California (Fresno County, Los Angeles County, San Diego County). The wood rat *Neotoma* spp. appears to be widely distributed and is a suitable reservoir animal.

Conenosed bugs, also commonly known as kissing bugs, of the genus *Triatoma,* are widely distributed in California and are generally associated with wood rats *(Neotoma).* Arboreal and terrestrial nests of the wood rats commonly harbor the insects. Conenosed bugs freely invade human dwellings and bite the inmates, usually when in bed; infection, however, is accomplished by "rubbing in" insect fecal matter dropped upon the skin. These bugs usually defecate when feeding and frequently bite the faces of sleeping persons, whence the name "kissing bugs."

VECTORS OF LEISHMANIASIS

Leishmania infections are not believed to be endemic in the United States, but it is generally agreed that this country might be invaded by anyone of the three leishmaniases provided a suitable vector were available. Kala azar is the visceral type caused by *Leishmania donovani* and *L. chagasi*; oriental sore, the cutaneous type, is caused by *Leishmania tropica*; and espundia, the muco-cutaneous type, is caused by *Leishmania brasiliensis.* While the latter is limited to Central and South America, the other two are widespread in the Mediterranean area, North Africa, India, South America and other parts of the tropical and subtropical world. There were 307 hospital admissions (Army) for leishmaniasis, according to the report previously referred to. All three leishmania infections are experimentally transmissible by the bites of one or more species of sandflies (*Phlebotomus* flies), minute crepuscular gnats already referred to as vectors of sandfly fever, a virus disease.

TYPHUS AND PLAGUE VECTORS

Louse borne typhus (epidemic typhus) continues to be a threat in thickly populated areas and demands constant vigilance as our population increases. Lousiness must not be tolerated.

Since *endemic typhus* is on the increase in California some space should be devoted to the flea transmission of this infection. Also some consideration should be given to the rat mite, *Liponyssus bacoti,* which has been incriminated as a laboratory vector. However, since considerable work is now in progress by several agencies, no further comments need be made here except to remark that flea vector potentialities with respect to endemic typhus and, of course, plague are intimately related to a growing rat population. No doubt, flea longevity may also play an important role in this connection.

It is not entirely out of place to speculate to what extent our increasing rat population is the result of increased backyard poultry production. With the end of the war this problem should be lessening. Then, too, higher garbage collection fees, even though only a few cents per family is involved, has resulted in more backyard disposal by individual householders, tending toward an increase in the rat population and, incidentally, in the production of flies, particularly blow flies. The menace of plague is discussed in great detail by Dr. K. F. Meyer in many of his publications. Of particular interest to the epidemologist are "Ecology of Plague" (*Medicine*, May, 1942) and "The Known and the Unknown in Plague" (*Amer. Jour. Trop. Med.*, Jan., 1942).

VECTOR LONGEVITY

Without a consideration of vector longevity, with respect to the spread of diseases, a discussion of vector potentialities would be incomplete. Considerable experimental work has been done on the extended viability of insect transmitted pathogenic agents. The vectors of malaria, dengue, yellow fever, and relapsing fever remain infective throughout the life of the insect, and in some infections such as endemic relapsing fever the pathogen is carried over from female to offspring by transovarian infection. As many as four generations of ticks may thus carry the infection and be able to transmit it, thus extending the danger over a period of two or more years. This situation adds materially to the complexity of the relapsing fever problem in our Sierran resort areas where *Ornithodoros hermsi* occurs.

It is not generally known that fleas "enjoy" a tremendous longevity. Unfed adult rat fleas *(Nosopsyllus fasciatus)*, vectors of endemic typhus fever, may remain alive 95 days; however, when fed, they may remain alive 106 days (Bacot). *Xenopsylla cheopis*, the oriental rat flea, a dangerous vector of plague, is reported to remain alive 100 days when fed. When one includes the maximum duration of the immature stages of total possible maximum longevity for the first named species may reach 680 days and the later 376 days. Of even longer life is *Pulex irritans*, the cosmopolitan human flea which is reported to have a maximum longevity of 966 days.

The Relation of Deep Roentgen Therapy to Aero-Otitis Media*

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WHILE on duty with the Air Corps as a flight surgeon and as an otolaryngologist, the author observed several cases in which trained flying personnel were permanently grounded because of persistent aero-otitis media. In 1943, a program to attempt to eliminate the small but definite waste of flying personnel was instituted, and to accomplish this it was decided that radiation therapy to the Eustachian tube tissue, if indicated, should be done. By indicated, it is meant that a diagnosis of Eustachian lymphoid hypertrophy causing defective patency of these tubes be established.

Let us begin by proving theoretically that such therapy has a sound basis. The mucous membrane lining of the Eustachian tubes may be smooth throughout but more commonly appears corrugated, evaginated, with ejections and longitudinal folds, the latter being more prominent near the pharyngeal end of the Eustachian tube and harboring lymphoid tissue.[8] The subepithelial tissue is composed of three layers, i.e., a basement membrane, a lymphoid tissue layer and a glandular layer—the last so named because of compound tubulo-alveolar mucoserous glands which are more apparent near the pharyngeal end.[6] The presence of the lymphoid tissue has been proven by Polvogt and Babb.[8] In fact, they have demonstrated the presence of it in all parts of the peri-Eustachian tissue in normal individuals. For the most part, authors on this subject agree that such lymphoid tissue in and about the Eustachian tube is always present with chonric diseases of the nose, nasopharynx and Eustachian tubes. They further believe that lymph nodules may appear anywhere throughout the tunica propria of the Eustachian tubes but are more numerous in the pharyngeal portion. Crowe and Baylor[3] from their experience of the study of deafness in childhood believe the lymphoid tissue is more hyperplastic in childhood than in later life. Farrior[4] has reported he has noted the presence of lymphoid nodules even so high in the Eustachian tubes as to be in the middle ear.

PATHOLOGY

Histopathologic changes in the Eustachian tubes, except for rare new growth and foreign bodies, are mainly those of inflammation and allergy. These inflammatory changes occur in the epithelial and subepithelial layers. According to Farrior[4] such inflammatory changes are those of increased mucoserous activity, edema, lymphoid hyperplasia and vascular congestion. Crowe believes that this lymphoid tissue in the nose and in the adjacent areas easily undergoes hyperplasia but that such hyperplasia is more active in children than adults. In healing, the above processes are reversed with or without scar tissue formation. However, after repeated inflammatory episodes, the lymphoid hyperplasia persists.

Teed,[10] in pressure chamber tests on 5,110 men, reported that hypertrophied tonsils and adenoids, contrary to a common belief, are not essential for the development of Eustachian tube obstructions. However, all of his cases failing in the pressure chamber test were observed to have lymphoid tissues about the Eustachian tubes, the fossa of Rosenmüller, or both.

RADIATION

Since it has been shown that lymphoid tissue does exist in and about the Eustachian tube and that it is an integral part of the mucous membrane of this area, it is logical to assume that adequate removal by surgical means is an impossibility. It is the size, the location and the chronic inflammatory changes of the lymphoid tissue which destroy the patency of the Eustachian tubes. Radiation is recognized as being of great value in causing regression of hyperplastic lymphoid tissue and an increase in lymphatic circulation. Properly used, it is a safe, effective and painless method of reducing lymphoid tissue in and about the Eustachian tube which cannot be removed by surgical therapy. Crowe[2] has used such therapy over a period of ten years in his interesting and instructive studies of deafness in children due to Eustachian tube obstruction.

The rationale for irradiation rests on the fact that lymphocytes and lymphoid tissue have a high sensitivity to irradiation.[1] Small doses of irradiation result in disintegration of the leukocytes and improved lymphatic circulation. Histopathologically, following this therapy, there is degeneration of old and young lymphocytes within the lymph follicles and absorption of the products of cellular disintegration. The most profound changes occur in the large cells composing the large germinal centers of the lymph nodes.[9] Schenck[9] in his study of the irradiation of lymph follicles took lymphoid tissue biopsy before irradiation, at two-week, four-week, and six-month periods following radiation. He found by comparison the significant fact that in the two-week and four-week specimens there was an increase in the number of lymph channels, that minute hemorrhages had occurred in the lymph nodes, and that young lymphocytes presented marked depression so that only cell fragments remained. In the six-month specimens, he found a striking and unexpected increase in the number of lymph channels, a loss of evidence of chronic inflammation and an absolute decrease in the fibrous tissue.

* Read before the Section on Eye, Ear, Nose and Throat at the Seventy-fifth Annual Session of the California Medical Association, Los Angeles, May 7-10, 1946.

Because of the high sensitivity of lymph tissue to irradiation, the necessary dosage employed in Eustachian irradiation is far below that which would cause any significant injury to the surrounding tissue. Besides the effect on lymphoid tissue, radiation also decreases the hypersecretory activity of the mucous glands. Therefore, it can be assumed that radiation may be used to reduce the size of the obstructing lymph nodes, to clear the lymph channels, decrease the secretion of the mucoserous glands and, therefore, to help restore the ventilating and aerating function of the Eustachian tubes. Contrary to the therapeutic effects of radiation, repeated Eustachian catheterizations may ultimately aggravate the obstruction as a result of continued irritation and scar tissue formation. We found that nasal decongestants are of value only in acute and subacute Eustachian salpingitis.

The type of irradiation to be employed is open to question. Crowe and Baylor,[3] Fowler [5] and Burnam [1] prefer radium or radon because in the long run it is cheaper and more easily applied. Radium and radon have the advantage that they may be applied intranasally to radiate directly the nasal and peri-Eustachian tissue without radiating intravening tissue. The disadvantages are that the greater and naturally more effective dose of radiation is given to only the pharyngeal end of the Eustachian tube and does not effect that lymphoid tissue that may be in the more distal portions of the Eustachian tube.

Roentgen-ray therapy has the advantage of permitting treatment of the entire Eustachian tissue, which is not possible with local radium therapy. But there is also the disadvantage of irradiating intravening tissue which is not involved in the process of faulty Eustachian ventilation. A thorough study of the effect of irradiation by x-ray, radium, or a combination of radium and x-ray, failed to reveal any distinguishing histologic changes produced by one method as compared with the other, provided adequate irradiation was applied.[7]

It must be stated at this time that one must never lose sight of the importance of removing the cause of the inflammatory process. An extensive and exhausting search must be made for such cause in the nose, ears and surrounding structures.

DOSAGE

In our series of cases, roentgen radiation, given under the expert supervision of well trained radiologists was used because treatment could be given over the entire Eustachian tube and because the disadvantages of this method were considered to be of no particular consequence. The x-ray radiation was given through a lateral port on each side with 10 cm. circle centered over the Eustachian tube, the following factors being utilized: 200 kw., 10 M.A., 50 cm. distance, 0.5 mm. of copper with 1 mm. of aluminum added filtration. Treatment was given at seven-day intervals with an average dose of 100 r to each side per treatment. The number of treatments was either four or six, depending on the apparent severity of Eustachian obstruction. The total average dose was 400 r or 600 r to each side. Since this amount of radiation is considered minimal, it was possible for us to repeat a second series of treatments after six or eight weeks without possible damage to the tissue irradiated. It was noted that following irradiation therapy the patient had a mild to moderate redness of the lateral nasopharynx. The patients also complained of some mild difficulty in swallowing, as a result of a tugging sensation in the nasopharynx, but otherwise were uniformly pleased with the therapy. They were quite skeptical that anything so simple could given them the desired results.

CRITERIA FOR THERAPY

We had approximately 150 men who had either persistent aero-otitis or deafness at high altitude referred as possible cases for radiation therapy. Of these, only 37 cases met our criteria warranting radiation therapy. In the work-up of our cases we first proved by pressure chamber tests that the individual had true difficulty in aerating the middle ear. It was fortunate that a pressure chamber was available, permitting a definite test of faulty Eustachian ventilation. The test was repeated following the course of roentgen treatment. In the work-up of the individual case a careful clinical examination of the nose, paranasal sinuses, nasopharynx, pharynx and ears was made. A dental check for faulty bite and a molar test were made. Allergic conditions were diagnosed by history and microscopic study of the scrapings of the nasal mucous membrane. It was attempted clinically to evaluate the patency of the Eustachian tube by inspection of the membrana tympani for retraction, particularly in the area of Shrapnell's membrane. A moderate Valsalva's inflation attempt was made by the patient and during this procedure the membrana tympani was observed for motion and fullness. If this occurred readily, it was surmised that the Eustachian tube was ventilating adequately. In none of the cases which we treated was this Eustachian patency demonstrable. Siegel's otoscope was also employed to determine the motility of the tympanic membrane and the mobility of the aural ossicles. No patient was considered for radiation therapy who had active ear disease. Nasopharyngoscopical examination of all cases was made in an effort to observe directly the Eustachian orifice and the tissue surrounding these orifices. It was noted that some of those cases which had no true difficulty aerating the middle ear had what could be considered excessive lymphoid tissue about the Eustachian tube. It was our experience that it cannot be assumed that the mere presence of excessive lymphoid tissue about the Eustachian tube denotes interference with the ventilating of this tube. If a pathologic condition was found which could account for the stimulation of the lymphoid tissue in and about the Eustachian tube, this condition was first corrected. When no pathologic condition could be found to account for the blockage and yet the pressure chamber test proved such a condition existed, it was inferred that hyperplastic lymphoid tissue existed deep along the tube. In all our cases, a psychiatric examination was

made by a psychiatrist because of the tremendous part psychoneurosis plays in ear symptomatology on aerial flight in war time. It is to be noted here that approximately 50 per cent of the referred cases were eliminated from radiation therapy because of psychoneurosis manifested by ear complaints. When it was found that an individual did not have allergic condition; chronic disease of the ear; chronic infection in the nose, paranasal sinuses or pharynx which would stimulate and perpetuate lymphatic tissue hypertrophy about the Eustachian tube; or psychoneurosis; then radiation therapy was given.

CASES

It should be noted that all cases which were given therapy complained of inability to aerate the middle ear on flight and that some complained of deafness. As 27 of these cases were free of tonsillar tissue, and ten were not, no relation could be drawn as to the effect on tubal obstruction of such tissue. Nine of the 37 cases, in addition to the complaint of inability to aerate the ear, complained of deafness; and hearing tests supported these complaints. Twelve of the cases did not reveal any excessive lymphoid tissue about the Eustachian orifices upon nasopharyngoscopical examination, whereas the other 25 did present an excessive lymphoid tissue picture about or near the Eustachian orifices.

Four to six weeks following the roentgen therapy the patients in this series were reexamined. Those who had complained of deafness associated with faulty Eustachian patency were found to have normal hearing. All except one passed as normal the follow-up pressure chamber and aerial flight tests. They were then returned to full military flying duty and had no further known ear difficulty. The one exception revealed an error in our preradiation work-up and is an important illustration of the tremendous importance of psychoneurosis in wartime. The patient in this case was given the usual workup, and the original pressure chamber test report was that the patient actually experienced true difficulty in aerating his middle ears. Following the radiation therapy, the pressure chamber test was again run. It was proven that this patient had no real difficulty in aerating his middle ears even though he complained when on aerial flights. The aviation physiologist who ran this test stated, "The subject certainly had no organic trouble, since he was able to descend through dense atmosphere at the rate of 6,000 feet per minute without traces of aero-otitis media." Furthermore, he was found to complain of ear pain when he thought he was being raised to a high altitude in the pressure chamber when actually he was maintained at ground level at all times.

Let us go over in more detail a rather typical case of persistent aero-otitis. The psychiatric and E.N.T. examinations were all negative except that the Eustachian orifices were surrounded posteriorly by excessive lymphoid tissues. Pressure chamber tests on this patient revealed definite difficulty in aerating the ears. He was unable to tolerate gradual pressure chamber changes of 200 feet per minute. After study it was felt that radiation therapy was warranted and such therapy was given. After the lapse of one month's time to allow for the subsidence of local tissue reaction, pressure chamber tests were again run in addition to aerial flight. The results of both of these tests showed no difficulty in aerating either of the ears. In the aircraft test, at an altitude of 15,000 feet, the plane was made to dive losing altitude at 5,000 feet per minute down to an altitude of 5,000 feet. Examination at this time showed the ear drums as normal and that the patient's previous symptoms were absent. The pressure chamber test was equally successful.

CONCLUSION

Since the series of cases presented is small, it is difficult to draw any definite conclusions. However, it is hoped that the results obtained in our series will stimulate sufficient interest in such therapy to cause more widespread usage of this treatment in the type of cases for which we have found it beneficial. Certainly, the commonness of aerial flight for business and pleasure is going to bring to prominence faulty Eustachian patency as never before. It must be remembered, though, that the indiscriminate use of deep x-ray therapy for every case of aero-otitis or conductive deafness must be carefully avoided. Unfortunately, we were unable to follow the patients satisfactorily for any appreciable length of time following completion of the therapy. Follow-up study would be of great value in determining the permanency of the results. If the tissue again undergoes hyperplasia following this therapy and does so within a short space of time, it will detract from the value of such therapy. However, at the present time of investigation, results are sufficiently satisfactory to warrant the use of this therapy in properly selected cases.

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Urachal Cysts with Malignant Invasion of the Bladder*

Three Case Reports

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IT is desired to discuss three patients presenting cysts of the urachus with invasion of the bladder by malignancy arising within the cysts. These patients were observed by the author between September, 1943, and January, 1945. The literature has been ably reviewed by others[1,2,3] and will not be repeated here.

CASE 1

A white male, aged 68 years (Case No. 123850) was admitted to Mercy Hospital, San Diego, September 11, 1943, and died September 15, 1943. Chief complaints were hematuria, frequency, increasing general debility, and enlarging lower abdomen of six months' duration. Examination was essentially negative excepting for signs of deterioration, prominent superficial abdominal veins, and a cystic tender mass occupying the lower one-half of the abdomen.

Laboratory studies revealed moderate leucocytosis, and secondary anemia. The urine was packed with erythrocytes, and presented 10-15 pus cells in each high power field. The blood Kahn test was negative. The Ascheim-Zondek test was negative for Prolan A.

The chest film was essentially normal. Excretory urograms revealed a normal left kidney, moderate hydronephrosis on the right, and lateral displacement of both ureters. Cystograms presented displacement of the bladder to the left, and irregularity of bladder outline.

Cystoscopy disclosed a papillary tumor arising in the dome of the bladder and extending downward to include the anterior lip of the prostate, and the right lateral wall of the bladder. Biopsies were taken. The pathologic report was, "Epidermoid Carcinoma of the Bladder (transitional cell type), Grade III cellular malignancy."

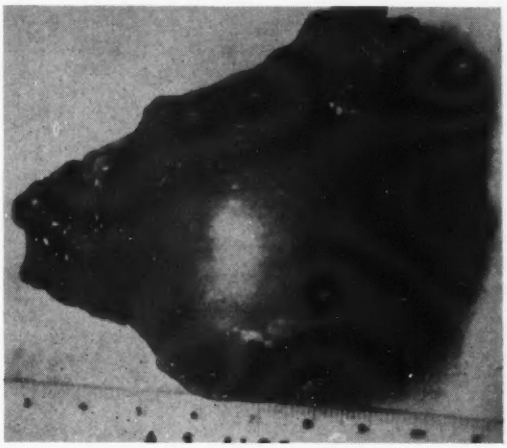
The final diagnosis was, "Cyst of the Urachus with Carcinoma Invading the Bladder." The patient was treated symptomatically only, because the lesion was felt to be inoperable.

CASE 2

A white male, aged 51 years (Case No. 6736), was seen in the office on January 11, 1945. Chief complaints were hematuria, frequency, and dysuria. Examination revealed moderate general deterioration, a firm cystic mass filling the lower abdomen from navel to symphysis. The urine was packed with blood and presented 10-15 pus cells in each high power field.

Cystoscopy disclosed a large necrotic papillary tumor arising in the dome of the bladder and including the anterior and right lateral walls. Retrograde pyeloureterograms revealed moderate bilateral hydronephrosis, and hydroureter of the upper two-thirds of both ureters. Both ureters were slightly displaced laterally, and the right ureter was displaced markedly anteriorly.

The diagnosis was made of Cyst of the Urachus with Carcinoma Invading the Bladder. Hospitalization was advised but refused by the patient. No biopsy was obtained.



Cyst with attached rectus muscle above, and the cuff of bladder with invading neoplasm below.

CASE 3

A white female, aged 38 years (Case No. 131829), was admitted to Mercy Hospital June 6, 1944, and was discharged June 28, 1944. The only complaint was intermittent hematuria for one year. For this she had been treated with endocervical radium with resultant artificial menopause without relief of the hematuria. Examination was negative except for a probable fibroid tumor of the uterus, and a sense of deep induration in the midline suprapubic area.

The blood count was normal. The urine presented 20-30 pus cells in each high power field, but no blood.

Cystoscopy revealed a tumor 3 cm. in diameter arising in the dome of the bladder. This tumor was flat, glistening, and solid. It presented a medullary appearance similar to adenocarcinoma of the colon. Retrograde pyelograms were essentially normal.

Biopsy report was, "Infiltrating Adenocarcinoma, presumed origin in colon."

X-ray films of the chest, colon, and upper gastro-intestinal tract were negative. Sigmoidoscopy revealed no disease.

On June 8, 1944, through a lower left transrectus incision, a cyst of the urachus, 8 by 5 by 5 cm. in dimension, was exposed. Separation from the peritoneum was accomplished easily. The apex of the cyst, which was firmly fixed to the rectus muscle, was mobilized by excising a portion of the rectus muscle with the cyst. The dome of the bladder was incised, and segmental resection of the bladder with the included tumor and cyst was completed. The bladder was closed in two layers. Seven 1.5 millicurie radon seeds were implanted in the line of incision into the bladder. Three additional radon seeds were placed in the rectus muscle attachment of the cyst. The wound was closed in the usual manner with a penrose drain in the space of Retzius. A urethral catheter drained the bladder.

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Bivalved cyst with attached rectus muscle above, and the cuff of bladder with invading neoplasm below. Note colloid nature of the contents of cyst.

The pathological report was, "1. Colloid Carcinoma arising in the Urachus. 2. Colloid Cyst of the Urachus."

Postoperatively the patient did well and was discharged on the 20th postoperative day. The wound drained urine on the 25th day, necessitating further urethral catheter drainage. For two months the patient was troubled with much dysuria, which was felt to be due to the use of radon. On March 9, 1945, examination and cystoscopy revealed no recurrence of the tumor. The patient was in excellent health and busy driving one of the large passenger busses.

Reviews have been presented of three patients suffering from cyst of the urachus with invasion of the bladder by malignancy arising in the cyst. Certain impressions suggest themselves. Tumors of the dome of the bladder, with or without abdominal masses, papillary or medullary in appearance, should always call to mind cancer of the urachus. Transurethral means of therapy should never be used. With large cysts, hydroureter and mild lateral displacement of the ureters can be expected. Marked lateral, and/or anterior displacement should suggest lymphatic metastasis. Large cysts associated with marked invasion of the bladder and general decline suggest inoperability. Cysts of the urachus should be considered in the presence of midline tumors in females. The use of radon and deep X-ray therapy is of questionable value.

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Asphyxial Death Due to Pulmonary Cryptococcosis*

A Case Report

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A BRIEF presentation of the clinical and pathological aspects of a single case of pulmonary cryptococcosis seems warranted, not only because of the relative rarity of the disease, but because the true diagnosis was not made nor suspected until some time after postmortem examination.

The patient was a Mexican male laborer 38 years old who was admitted to the Southern Pacific General Hospital February 26, 1945, with the probable diagnosis of pulmonary tuberculosis, submiliary type. His chief complaint was shortness of breath of 15 days' duration. He had lost 13 pounds in weight during the preceding two months, had started coughing one month before entry and had been bringing up a mucoid sputum with the cough.

On physical examination the thorax was noted as symmetrical, wasted and emphysematous. The lungs were clear to percussion and auscultation except for decreased breath sounds over the right base posteriorly. In other respects there was nothing of significance noted in the physical examination.

The temperature variation was 37.2 to 37.6, with occasional rises to 38.3. On March 14, the temperature rose to a maximum of 40.2 but returned to its former level the next day. Blood pressure was 115 over 75.

Laboratory Examinations: Results of the Wassermann and Kahn tests were negative. Leukocytes numbered 27,000 with 95 per cent neutrophiles and 5 per cent lymphocytes. On two occasions (February 27 and March 19) urinalyses were negative. Three sputum examinations were made for tubercle bacilli and none was found.

The conclusions of the roentgenologist after x-ray examination on February 26, the day of patient's admission to the hospital were as follows: "It would be my impression that we are dealing with a form of submiliary lesions, possibly tuberculous. Evidence of pleuritis with adhesions and fluid at the right base."

A notation by a member of the staff of March 3 is as follows: "Believe we are dealing with obstruction of a major bronchus causing atelectasis of right lung due to either pressure from without or blockage from within."

On March 8 another member of the staff—with a *pre-operative diagnosis* of "tracheal obstruction—tumor?"—examined the patient with a bronchoscope and made the following notations: "Nodules visible at 5 o'clock 3 cm. below larynx. Large fungating tumor mass from 10 over to 3 o'clock about 6 cm. below larynx."

Postoperative Diagnosis: "Fungating tumor mass stenosing tracheal lumen to about one-sixth normal."

At this time a small biopsy specimen was removed and submitted for histological examination and diagnosis. The report follows:

"This small piece of tissue is 0.6 x 0.6 cm.

"Histological Examination and Diagnosis: Mucous polyp.

"Note: There are no evidences of malignancy. The surface of this tissue is covered with pavement epithelium and consists essentially of a soft, spongy mass of alveolar-like tissue throughout which are small, round, irregular-sized, psammoma-like bodies."

Therapy was largely symptomatic for relief of cough and attempted relief of dyspnea. Between March 14 and March 20 nearly one million units of penicillin and 390 grains of sulfadiazine were given.

On March 20 another bronchoscopic examination was made with the following results noted: "Unable to get beyond the large polyp mentioned previously. Was able to see two other polyps beyond the big one."

The patient continued a downhill course and expired March 24. Autopsy was performed and the tissues were submitted to the author for further examination.

The tongue, the tissues from the neck, the lungs, the aortic arch and the esophagus were received in one mass. The trachea and bronchi were filled with a thick, mucinous material which extended deeply into the bronchial trees of each lung. Scattered throughout the lungs were small indurated areas, suggestive of silicosis, and occasional mucinous-containing lesions. The lungs also contained irregular areas of emphysema, atelectasis and edema.

To the right of the trachea 2 cm. above the bifurcation was a cystic mass measuring 4.5 x 3.8 x 4.5 cm., and there was a similar mass 4 x 3 x 3.5 cm. in the angle of the tracheal bifurcation. The esophagus was adherent to the posterior surface of this latter mass for a distance of 2.3 cm., where it was slightly compressed. The masses contained thick mucinous material. The upper mass extended through the tracheal wall and the lower mass protruded into, and largely obstructed, the lumina of both main bronchi.

Sections of the cyst-like masses and smears of the mucinous material from the bronchi contained many encapsulated organisms characteristic of Cryptococcus neoformans (Torula histolytica). There were additional lesions of cryptococcosis in sections from several different areas of each lung. Areas of silicosis were also demonstrated in sections, but no tuberculosis was found. Sections of the liver, spleen, adrenals,

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pancreas and kidneys contained no lesions of cryptococcosis.

The head was not opened for examination of the brain because of the absence of central nervous system symptoms.

COMMENT

The organisms (Cryptococcus neoformans) were numerous and easily demonstrated in the tracheal and bronchial mucinous material by direct wet smears mixed with a small amount of India ink. By this method the mucinous capsules of the organisms with their included centrally located yeast-like bodies could be clearly seen. It seems from this fact that a similar examination of the sputum should have made an earlier diagnosis possible.

The organisms were present in the sections of the small biopsy specimen stained with hematoxylin and eosin and were noted as round bodies within the net-like spaces of what was at first diagnosed by the author as a polyp. It was not until the sections from the autopsy material were examined that the true cause of the lesions became evident.

The additional interesting feature of this case is that death was undoubtedly the result of asphyxia produced by the blockage of the trachea and bronchi with mucinous capsular material produced by the Cryptococcus neoformans.

In conclusion, there are three splendid reviews of the subject "Cryptococcosis" in which will be found excellent bibliographies:

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MEDICAL PROGRESS:

Treatment of the Anemias

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THE recent advent of folic acid as a possible substitute for liver extract in the treatment of pernicious anemia and other megaloblastic anemies has made it worthwhile to review the subject of the therapy of the anemias in general and to evaluate recent modifications of methods of therapy. No attempt will be made to discuss the agents which have been found useful in the treatment of leukemia and tumors involving the hematopoetic and lymphatic tissue. We are concerned primarily with the measures which have been shown to be of value in relieving anemia directly by increasing the production of red blood cells, by slowing accelerated destruction or by replacing deficient formation with transfusions.

In a current review of the literature Cartwright [4] has summarized present knowledge of the dietary factors concerned with red cell formation in animals and man. While there is no incontrovertible evidence that deficiency of any one of the known vitamins, including members of the B complex, is responsible for the development of anemia in man, it is well recognized that a diet adequate in protein and vitamins provides the necessary background for optimum treatment of anemia by more specific measures. Inadequate intake or inadequate absorption of the extrinsic factor of Castle, which at present remains unidentified, is responsible for a variety of nutritional macrocytic anemias throughout the world but the occurrence of macrocytic anemia on the basis of deficient intake of foods containing the extrinsic factor is uncommon in this country.

CLASSIFICATION OF ANEMIAS

The morphologic classification devised by Wintrobe [37] provides the most useful basis for a broad concept of the anemias since the changes which occur in mean corpuscular volume and hemoglobin content and hemoglobin concentration as anemia develops are closely related to etiology and hence to treatment. The diagnosis of anemia depends on the accuracy of estimation of the three basic determinations, namely, the mean corpuscular values as derived from the hematocrit, the hemoglobin determined in grams per 100 cc., and the erythrocite count.

In addition to the determination of the mean corpuscular values, some measurement of the rate of blood formation should always be included in the differential diagnosis of anemia. The rate of blood formation is best measured by a reticulocyte count, but a study of the number of polychromotophilic cells in the ordinary Wright's stained preparation will frequently suffice to indicate whether red cell formation is increased or decreased. Variations in size and shape of the red cells and abnormalities of the leukocytes and platelets provide important leads to diagnosis of the type or cause of the anemia, and it is unfortunate that the physician has largely abandoned this part of the examination.

The diagnosis of anemia begins with the history and physical examination but in most cases the final conclusion will be reached by accurate examination of the abnormalities of the peripheral blood.

MACROCYTIC ANEMIA

In this group the mean corpuscular volume shows a progressive increase as the anemia develops and while the individual cell, being larger, contains more hemoglobin per cell the concentration of hemoglobin in the red cell tissue remains normal. Pernicious anemia, which is characterized by certain clinical and hematological features is the classical example of this group but the macrocytic anemia of sprue, nutritional macrocytic anemia and the megaloblastic anemia of children and infants are all variations which have in common the megaloblastic changes in the bone marrow.

There is unanimous agreement that refined liver extract (15 U.S.P. units per cc.) is as effective in controlling pernicious anemia as crude liver extract (1 or 2 U.S.P. units per cc.).[14,16,33,34] Complete relief of the anemia and gastrointestinal symptoms and glossitis is the rule. The treatment of neural lesions has been more difficult to evaluate but the results have been uniformly good in typical cases and there is little evidence that crude liver extract and additional B complex vitamins [38] produce further improvement following optimal treatment with refined liver. There is also general agreement that liver therapy should be administered by intramuscular injection. The oral route is unsatisfactory because some patients fail when receiving the treatment by mouth, to obtain control of the anemia and neural lesions. About 60 times as much liver is required for adequate oral therapy so this method is also less desirable from the standpoint of economy of liver factor. It is also easy for the patient who is receiving oral treatment to discontinue the medication and go into relapse.

The intramuscular injection of 1 or 2 cc. of liver extract (15 to 30 U.S.P. units) every three or four weeks provides optimum treatment for all but the occasional patient. In the published series no patient has required more than this amount to control the neural lesions and the results of giving larger doses

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have been equivocal. The patient may be taught to take the treatment at home but this is less desirable than a regular visit to the doctor's office. The interval between injections should be reduced in the presence of acute infections or in chronic illness of any type, since the need of liver factor is increased. In the presence of neural symptoms the peripheral blood is not a guide to adequate maintenance therapy since several times as much liver extract may be required to prevent progression of spinal cord degeneration as is necessary to maintain a normal hemoglobin level. Improvement and control of neural symptoms and signs rather than the blood count is the guide to adequate therapy when neural lesions are present.

In the treatment of pernicious anemia in relapse we have followed the principle advocated by Askey [2] of giving a large total dose of 100 to 200 U.S.P. units during the first week of therapy. Theoretically this large initial dose is needed to fill the depleted stores of liver factor. In administering liver extract to patients with pernicious anemia in relapse the physician has the responsibility of confirming the diagnosis by following the response to therapy so the patient may be told with certainty that liver injections must be taken at intervals for the rest of his life.

To supplant liver extract in the treatment of pernicious anemia a new agent must be as effective and provide the advantage of the oral route. Although many observers have demonstrated that folic acid will initiate a hematologic remission in pernicious anemia and other macrocytic anemias with megaloblastic changes in the bone marrow,[9, 29, 31, 36] it is evident that treatment with folic acid alone will not restore the hemoglobin and red cell count to a normal level in many patients with pernicious anema.[1, 19, 28] It also appears certain that folic acid does not control or improve the neural lesions, and neural lesions may appear first and progress rapidly during maintenance therapy with folic acid.[10, 23, 32] These observations are certainly contraindications for the routine use of folic acid in treatment of pernicious anemia and there will probably be few instances in which it will be shown to be a useful adjunct to liver extract.

It appears that folic acid may be the most effective agent yet used in the treatment of the macrocytic anemia and other manifestations of the sprue syndrome [8, 25] although more studies are necessary for final evaluation. Macrocytic anemia with megaloblastic changes in the marrow which fail to respond to injections of refined liver extract have been reported. These patients exhibit free hydrochloric acid and an absence of steatorrhea. A background of nutritional deficiency is common and the association of pregnancy is frequent. After failure to respond to injections of refined liver these patients have responded to whole liver, proteolyzed liver, and folic acid by mouth.[11, 12, 35] Some have responded to large doses of crude liver intramuscularly.

Of considerable interest and importance are the reports of macrocytic anemia in infancy and childhood which are associated with megaloblastic changes in the marrow.[13, 39] Those occurring in infancy have been shown to respond to liver extract and to folic acid. Those occurring in childhood were refractory to refined liver extract but have responded to proteolyzed liver by mouth. A patient with macrocytic anemia and megaloblastic changes in the marrow who fails to respond to injections of refined liver should be given folic acid, oral liver preparations and large doses of crude liver intramuscularly before it is decided that the anemia is refractory to therapy.

Sensitivity reactions of all types and degrees of severity have been observed in a small percentage of people taking intramuscular liver extract.[17, 24, 27] It is agreed that the sensitization is developed for the antianemic principle and is not dependent on organ or species protein. If the manifestations are mild smaller injections at frequent intervals with concomitant use of adrenalin will usually suffice for control of symptoms. If the reactions are severe desensitization with gradually increasing doses of liver extract will usually be successful. The desensitized state will usually be maintained by giving the regular maintenance injection at intervals not greater than seven to fourteen days. In view of the unsatisfactory nature of oral therapy and the danger of neural relapse with folic acid, a concerted attempt should be made to secure desensitization before treatment of pernicious anemia with intramuscular liver is abandoned.

In spite of evidence of a higher incidence of carcinoma of the stomach in patients with pernicious anemia, we have not advocated frequent gastrointestinal examinations. In this clinic three patients out of 35 have developed carcinoma of the stomach in five years, which is a high incidence, but the ages of the patients were 72, 78 and 84 years, and due to a variety of factors it is almost certain that these three patients would not have submitted to a periodic fluoroscopic examination. We have not prescribed hydrochloric acid as a routine measure since few patients have complained of gastrointestinal symptoms and no benefit has been noted in its use of those patients who have had dyspepsia.

MICROCYTIC HYPOCHROMIC ANEMIA

When a state of iron deficiency develops from any cause the size of the average red cell usually is diminished and, more important as a diagnostic criterion, the concentration of hemoglobin in the red cell tissue as expressed by the mean corpuscular hemoglobin concentration (M.C.H.C.) falls below the normal optimum level. The discovery of a true hypochromic anemia, that is one in which the M.C.H.C. is low, always calls for an explanation, particularly in the adult male, since chronic blood loss from an otherwise silent gastrointestinal lesion may be the cause. Aside from chronic blood loss, growth and the demands of pregnancy are the most important factors in the production of iron deficiency. A diet inadequate in iron is frequently a contributing factor in iron deficiency but is seldom if ever the sole cause.

There is general agreement as to the effectiveness of oral iron medication in the treatment of hypochromic anemia.[21] Iron should be given in the fer-

rous state as either ferrous sulfate or ferrous gluconate, and 0.2 gm. to 0.4 gm. three times daily with meals will provide adequate treatment. Since unpleasant gastrointestinal symptoms result from iron therapy in a minority of patients it is well to begin with the small dose. Ferrous gluconate is reported to be better tolerated than ferrous sulfate.[30] Sometimes it is necessary to omit iron with the lightest meal of the day in order to avoid discomfort. A reticulocyte response and a steady rise in hemoglobin during the first few weeks should follow the administration of iron by mouth.

If it is necessary to repair iron deficiency anemia rapidly or if iron therapy cannot be tolerated by mouth the transfusion of whole blood or concentrated cells is the treatment of choice since the iron introduced as hemoglobin can be reutilized in blood formation. Other forms of parenteral iron therapy are unnecessary and not satisfactory because the amount of iron that can be given without production of toxic symptoms is small.[18,22] The addition of liver and vitamins to oral iron preparations is unnecessary and only adds to the cost of the medication. Borderline iron deficiency anemia is probably the most common deficiency state because of chronic blood loss (menstruation) and pregnancy, plus the factor of low iron content of the average diet. The frequent use of iron tablets which are inexpensive has more to recommend it than the popular use of expensive vitamin preparations.

In connection with the discussion of iron therapy it is well to remember that the color index is not a guide to presence of iron deficiency since the color index is low in the simple microcytic anemias which are commonly associated with infections and are not due to lack of iron and do not respond to iron medication. Anemias in which the color index is low should not be expected to respond to iron unless the concentration of hemoglobin in the red cell tissue, M.C.H.C. is also shown to be below normal. The only anemia in which the M.C.H.C. is low which does not respond to iron therapy is Mediterranean anemia, a heredo-familial disorder not associated with the causes of iron deficiency.

NORMOCYTIC NORMOCHROMIC ANEMIAS

A normocytic anemia is characterized by a simple reduction in the number of circulating red cells without much variation from normal of mean cell size or of hemoglobin concentration. The anemias of acute blood loss and increased blood destruction are typically normocytic and normochromic but are usually recognized by characteristic clinical manifestations. The remaining causes produce a normocytic anemia by decreased blood formation.

1. Chronic inflammatory processes.
2. Chronic nitrogen retention.
3. Refractory anemias (aplastics, etc.) due to chemical or physical injury of the marrow or to causes unknown.
4. Invasion of the marrow by tumor tissue.

As is readily seen the discovery of a normocytic normochromic anemia in the absence of acute blood loss or increased blood destruction is usually of serious import to the patient since many of the disease processes which produce an anemia of this type are irreversible. The anemia responds only to the removal of the cause and is not affected by iron, liver or folic acid medication. Chronic infection may be overcome or irradicated but chronic nitrogen retention which is always associated with some degree of anemia can seldom be relieved.

A bone marrow depressed by exposure to toxic substances may begin to regenerate erythrocytes, leukocytes and platelets in a normal manner after a period of months or years but recovery is not usual. As emphasized by Bomford and Rhoads [3] the patient with refractory anemia should avoid exposure to aromatic compounds. A diet high in B complex vitamins augmented by brewer's yeast by mouth and injections of crude liver extract should be given as supportive therapy. Transfusions of whole blood or concentrated red cells present the only immediate effective way of combatting the anemia and should be used as needed. Many patients with so-called aplastic anemia have made an eventual recovery after months or years of being sustained by transfused blood.

Studies of the longevity of transfused red cells by several methods show that the average red cell lives about 120 days so that 50 per cent of transfused blood should be present at the end of 50 to 60 days providing the cells have not been stored too long before use or that the patient has not built up an atypical isoagglutinin such as anti-Rh or Hr antibodies. Patients who are receiving repeated transfusions should be given only Rh negative blood if they are Rh negative and should be watched for the signs of increased blood destruction such as a rise in the icterus index to prevent futile transfusions and to avoid the danger of severe hemolytic reactions. Repeated transfusions also seem to produce a susceptibility to febrile reactions which are not hemolytic in origin. In my experience such reactions may be kept at a minimum by using freshly drawn citrated blood instead of stored blood, and by using donors who have fasted for at least 12 hours.

SIMPLE MICROCYTIC ANEMIA

This type of anemia, commonly seen in association with a chronic inflammatory process, deserves a special place in the morphological classification because it may be confused with iron deficiency anemia since the color index is low. Because the mean cell volume is below normal there is less hemoglobin per cell, but the concentration of hemoglobin in the red cell tissue (M.C.H.C.) is normal, indicating an absence of deficiency of hemoglobin. The simple microcytic anemias should be distinguished from the microcytic hypochromic anemias since they do not respond to iron therapy and are due to an entirely different process.

Cartwright [5] and his co-workers have recently thrown new light on the pathological physiology of the anemias associated with chronic infection. The

anemia is normocytic at first and then becomes microcytic, but in no instance has it been observed to be macrocytic or hypochromic. The level of plasma iron was found to be low in all of 16 cases studied and when iron was administered the absorption curve was flat as in hypochromic anemia, but there was no reticulocyte response or rise in hemoglobin level as follows iron therapy in hypochromic anemia. It appears that iron is removed from the plasma and utilized or absorbed in inflammatory tissue and is not available for the formation of blood.

The simple microcytic anemias do not respond to iron or liver therapy and improvement cannot be expected until the chronic inflammatory process has been improved or eliminated. Usually the hemoglobin level does not fall so low as to require transfusion because of oxygen want although transfusions are frequently given as part of general supportive therapy.

HEMOLYTIC ANEMIAS

Anemias due to accelerated blood destruction usually show mean corpuscular values close to normal but are easily distinguished from other anemias by the signs of increased blood destruction and increased blood formation. During the past decade investigation has confirmed some old concepts of two common varieties of hemolytic anemia. It is now evident that familial hemolytic jaundice and acquired hemolytic anemia are fundamentally different in etiology and are not variations of the same disease process. There is now good evidence that the defect in congenital hemolytic jaundice lies in faulty structure of the cell while in acquired hemolytic anemia with spherocytosis the accelerated hemolysis is due to the production of an immune body type of hemolysin.[6,26,15] Splenectomy is the only effective treatment in both conditions although the operation frequently does not produce a complete or permanent remission in acquired hemolytic anemia. In our own experience splenectomy has produced a complete clinical remission in all cases of congenital hemolytic jaundice, which is in keeping with the reports of others.

Of eleven patients with acquired hemolytic anemia studied here only one has made a spontaneous recovery. The accelerated hemolysis in this 16 year old girl was associated with a right middle lobe pneumonia and a high titer of cold agglutinins. The rate of blood destruction fell to normal as the signs of infection cleared. One patient died without splenectomy because the hemolytic process was so severe that there seemed to be no opportunity to carry out the operation before death. Of nine patients who have undergone splenectomy after a period of observation, only one showed no benefit, five have shown varying degrees of improvement but still exhibit some anemia with evidence of increased hemolysis. Three patients have shown clinical cures for over two years but one of these relapsed and died of hemolytic anemia following the resumption of gold therapy for arthritis. It is evident that the response to splenectomy is variable in acquired hemolytic anemia, but in the majority of cases it is the only treatment which is effective and should not be delayed beyond a few days of observation since spontaneous recovery is unusual.

Recovery from acquired hemolytic anemia following the removal of an ovarian tumor has been reported and it appears that a variety of agents, infection, tumor or medication may furnish the antigenic stimulus for hemolysin production. In our experience the onset of acquired hemolytic anemia in most cases has appeared to be spontaneous and not associated with recognized exposure to external agents or with internal diseases.

We have not hesitated to use transfusions of whole blood or concentrated red cells when needed in all forms of hemolytic anemia. By and large, multiple transfusions have been well tolerated by patients with a variety of hemolytic anemias and in many instances have been life saving by permitting operation for splenectomy in patients with acquired hemolytic anemia. One patient with acquired hemolytic anemia died in uremia following multiple transfusions but here the situation was complicated by the presence of an atypical isoantibody which was evidently different from the hemolytic antibody. In giving multiple transfusions to patients with hemolytic anemia the usual precautions such as Rh typing should be used and the cross matching of blood should be carried out at 37° C. in a test tube to detect the presence of other atypical antibodies. Splenectomy should be done even in desperate cases if there is no improvement after several transfusions. Since the transfused cells become involved in the hemolytic process in acquired hemolytic anemia the benefit of transfusion is very transitory.

We have observed hemolytic crises following transfusions in patients with congenital hemolytic jaundice and paroxysmal nocturnal hemoglobinuria. The patient with congenital hemolytic jaundice had a lower red count two days after transfusion than before and splenectomy was carried out successfully without further transfusion. The patient with nocturnal hemoglobinemia exhibited a hemolytic crisis with hemoglobinuria following the first transfusion, but since then has been treated with multiple transfusions of concentrated cells for a period of over two years with no further hemolytic reactions. Since the defect which produces the accelerated blood destruction in this disease lies in the red cells of the patient,[20] transfused cells have a normal longevity so transfusions are much more effective than in acquired hemolytic anemia.[7] The rate of blood destruction is actually diminished as the patients' cells are replaced by normal transfused cells. The same phenomena have been observed in sickle cell anemia in which the defect is in the patient's cells. Hemolytic activity as measured by the icterus index and fecal urobilinogen, diminished as the hemoglobin level was brought up to normal by transfusion and the production of defective cells in the patient's marrow was reduced. In general, the maintenance treatment of chronic hemolytic anemia with transfusions is

difficult if not impossible unless unlimited amounts of concentrated cells are available, so that cells from four or five pints of blood can be given in the course of two or three days.

SUMMARY

It is evident in the foregoing discussion that the treatment of anemia is specific and that the agents used should depend on the type of anemia encountered. The administrations of liver extract is specific for pernicious anemia and other megaloblastic anemias, but it is without effect on red cell production in other types of anemia. Iron therapy is all that is needed in hypochromic microcytic anemias but it is of no value when iron deficiency does not exist. Preparations containing iron, liver, folic acid, and other ingredients are expensive and cannot be recommended as efficient therapeutic agents. The use of such mixtures without proper diagnosis is to be condemned since if iron deficiency is present the patient should be investigated for a source of blood loss and if liver factor is needed the patient probably has pernicious anemia, and should plan to take therapy for the rest of his life. Patients who have normocytic or simple microcytic anemias should be investigated to determine if the cause is reversible or not. Iron and liver therapy should be given to patients with normocytic anemias at separate intervals but a lack of response in such instances should not be considered a reflection on the effectiveness of these therapeutic agents. It appears now that folic acid should be used in the treatment of sprue and further controlled observation of its effect on various disorders of blood formation is desirable. Folic acid should not replace intramuscular liver extract in the treatment of pernicious anemia.

Transfusions offer the only effective method in the treatment of normocytic anemias due to decreased blood formation unless the underlying cause can be removed. When concentrated red cells are available multiple transfusion offers the most effective form of therapy. Splenectomy is indicated in congenital hemolytic jaundice and acquired hemolytic anemia. No rule can be made as to when splenectomy should be done in patients with acquired hemolytic anemia and is a difficult decision to make if the patient is desperately sick. Spontaneous recovery is rare and splenectomy should not be delayed beyond several days in most patients. Multiple red cell transfusions may be used in all types of hemolytic anemia and maintenance therapy with transfusions is possible if necessary in paroxysmal nocturnal hemoglobinuria.

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California Cancer Commission Studies*
Chapter IV

Biopsy — Indications, Technic and Safeguards

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THE acceptance and desirability of biopsy are so well established today that it may be said that biopsy should be done in every case of malignant tumor or where malignancy is in doubt, unless there is particular contraindication. By biopsy is meant the removal of tissue from a lesion on a living patient for microscopic examination and diagnosis. This includes the removal of entire nodules, such as a lymph node or nodes, a nodule from the breast, or a growth in the skin or connective tissue with surrounding normal tissue. The clinical diagnosis of neoplastic disease is only the impression of the examining physician. The final diagnosis, and commonly the planning of a rational program of treatment, must be based on the microscopic examination of tissue from the growth. This final proof is also needed for record and research.

Biopsy is of greatest use in early malignancies or small lesions, and of least value in large fungating lesions of the breast, skin, or lip, for example; but even in most of these late lesions valuable information as to the type and degree of malignancy is obtained by microscopic studies. Valid statistics as to the outcome or results of various types of treatment on various types or grades of cancer can be obtained by no other method, except autopsy studies. It is no reflection on the ability of a physician if he tells a patient with a suspicious lump or ulcer: "I do not know whether this is cancer or not. I must take a piece of tissue for microscopic study." Rather it is an acknowledgment that the physician chooses to use the best method available to obtain a proper diagnosis.

Some physicians refrain from doing biopsies because of fear of disseminating the tumor cells or stimulating their growth. Innumerable experiments and decades of clinical experience have shown that when biopsy is properly done there is very little danger of this in the vast majority of tumors. In the best clinics throughout the world biopsy of accessible tumors has been done practically routinely for years, and each year it is done more extensively.

As a general surgical principle it is better to remove most tumors completely with surrounding normal tissue, if feasible. *Pigmented nevi or melanomas should always be very widely removed and never cut into.* Likewise, it is poor surgical practice to cut into a tumor with skin tightly drawn over the surface, lest non-healing and the production of a malignant ulcer result. In cases of blood vascular tumors care should be taken not to cut into the lesion. Rather, the cut should be wide of the lesion and through normal tissue. If a lesion is accessible and small, such as a cancer of the skin of the face or a small subcutaneous mass or a nodule in the breast, the entire lesion with a zone of surrounding normal tissue should be removed. This then becomes the biopsy specimen. Small basal cell carcinomas of the skin can be entirely eradicated by this radical biopsy, and the pathologist should make multiple sections through the narrowest axis of the tissue submitted in order to determine microscopically if there has been complete removal of the tumor. Small nodules in the breast should be removed completely, with surrounding uninvolved tissue. This should be done only in a hospital where frozen section examination of the tumor may be made promptly. For large masses, biopsy is best performed by removal of a small piece of the tumor rather than by complete excision. Certainly the trauma of a properly made surgical incision entails little or no more risk than rough and repeated palpation of a tumor by the patient, anxious relative, or physician. The value of the information obtained far outweighs the dangers, just as the value of sulphonamide drugs in treatment of various infections outweighs the toxic effects of the drugs.

If conditions are such that at the time of biopsy the entire lesion cannot be excised, great care must be taken to remove a satisfactory specimen. All too often a pathologist receives only a portion of a thick crust or of necrotic tissue from the surface of a lesion, usually taken by one inexperienced in this procedure. A portion from the border of the lesion but still within its substance should be removed. The specimen should be deep enough to include the vascular supporting tissue beneath the tumor, and wide enough to include some of the uninvolved mucosa or skin so that the pathologist may determine the changes going on at the margin between the neoplasm and the non-involved tissue.

If mechanically possible, papillomatous growths should be entirely removed, so that changes at the base can be properly studied. This is particularly true of rectal or sigmoidal polyps and of papillomatous lesions of the skin.

The surgeon is sometimes tempted, in obtaining a lymph node from an area in which several nodes are involved, to remove a small, easily movable node at the periphery of the involved group. In some cases this specimen may show changes characteristic of the disease process present in all the nodes, but in many cases only simple lymphoid hyperplasia is seen and the biopsy has been in vain. A node which is obviously involved should be selected.

* Organized by the Editorial Committee of the California Cancer Commission.

METHOD OF BIOPSY

The best instrument for obtaining most biopsies is a scalpel. It should be used with *the least amount of trauma to the tissue.* The practice of seizing the piece of tissue with a pair of forceps and cutting around it defeats the purpose of the biopsy, since squeezing breaks the tumor cells. Then all that can be seen in the microscopic slide is chromatin from ruptured cells strewn throughout the supporting stroma, or cells practically disrupted and the architecture so distorted that recognition of tumor is impossible. If forceps must be used at all, the bite should be made at the extreme edge of the tissue. Criticism can also be levelled at the procedure of obtaining tissue by cautery. Since several millimeters of tissue are cooked by this procedure, all except large biopsies are ruined by the cellular dissolution resulting from the heat. It would seem best, if it is deemed wise to use cautery, to take the biopsy specimen with a knife and then cauterize the base.

ARMAMENTARIUM

For the usual biopsy all you need is either

—a scalpel or
—a sharp punch
—a 10 cc. luer and 16 gauge needle.

In less accessible areas such as the upper rectum, nose, larynx, or bronchus, suitable biopsies can be obtained only by biting forceps or punches, which must be sharp to avoid crushing or tearing the specimen. If the thought is entertained by the physician and pathologist that the patient's life depends on a properly made tissue examination, greater care would be taken by them to insure a proper diagnosis.

Diagnostic curettage of the uterus is frequently poorly done. Use of too large a curet through an incompletely dilated cervix should be avoided because the curettings are chopped to pieces by multiple short strokes and crushed beyond recognition by pressure between the curet and the rigid cervix. Care must be taken to avoid crushing on the gauze used to wipe the pieces from the vagina. The art of the trained gynecologist, who gently removes strips of tissue or solid, unsqueezed chunks, should be emulated.

In rare instances, in tumors inaccessible to direct attack, aspiration biopsy may be used. This procedure has certain hazards and there are difficulties in the interpretation of the specimen. It should be done only by one trained in the method and the specimen should be diagnosed only by a pathologist with long experience in this field.

Frequently information as to the presence of tumor may be obtained by examination of fluid aspirated from the chest or abdomen. Fifty to seventy per cent of fluids secondary to neoplasm should show recognizable tumor cells if sufficient fluid is obtained and proper study done by a trained pathologist. At least eight to twenty-four ounces of fluid should be submitted, free from anticoagulant, promptly after removing, so that degenerative changes and necrosis of the tumor cells do not occur before examination is made. Smears of the sediment and sections of the centrifuged sediment and fibrin clot after imbedding in paraffin should be carefully studied.

Biopsy of the sternum by a small trephine followed by curetting of the sternal marrow with a small bone curet is particularly valuable in the diagnosis of multiple myeloma or aleukemic leukemia. The use of this procedure in most blood dyscrasias is of academic interest and is not necessary except in problem cases.

Biopsy of suspected lesions in the abdominal cavity is satisfactorily done through a peritoneoscope by those with long experience with this instrument.

Biopsies of bone tumors must be taken through normal tissues. Usually the specimens are not suitable for a frozen section diagnosis because they must be decalcified. The wounds through which biopsies are taken must be closed without drainage.

FIXATION OF TISSUES

In office practice, an infallible rule should be that *before any biopsy is done a suitable container and fixing fluid should be at hand.* Arrangements should be made ahead of time with a pathologist to furnish a supply of bottles and fluid. Tissue should be placed immediately into the fixative so that autolysis with loss of structural detail will not occur. The fluid volume should be about ten times the volume of the tissue specimen. The best routine for small pieces such as skin, cervix, etc., if the specimen does not have to be mailed, is Zenker's solution, containing mercuric chloride and potassium dichromate, but without the acetic acid called for in the official formula. [Mix: potassium dichromate, 2.5 gm.; mercuric chloride, 5.0 gm.; sodium sulfate, 1.0 gm.; water, 100 cc.] Small pieces of tissue are readily fixed in a few hours or over night, but tissues should not be left in this solution over 24 to 36 hours. A worthwhile procedure is to place small pieces of tissue on a square of blotting paper which may then be dropped into the fixative. Larger pieces, which require considerable gross examination and sectioning by the pathologist before he takes representative pieces for microscopic examination, and smaller pieces which must be left in solution over 36 hours before receipt by the pathologist, should be placed immediately in 10 per cent formalin, (4 per cent formaldehyde) made by diluting formalin (40 per cent formaldehyde) with nine parts of water or normal saline. In no circumstances should the speci-

FIXATIVE SOLUTIONS

10 per cent Formalin **Dilute formalin (40 per cent formaldehyde) with nine parts water. Best for large specimens or if they are to be mailed to pathologist.**

or *Zenker's Solution* (without the acetic acid). Best for small pieces when pathologist gets them promptly.

men be allowed to dry; but if this does happen by error, tissue can be resurrected by soaking it in normal saline for about 30 minutes, followed by fixation in one of the previously mentioned fluids. The specimen should not be placed in water, for that causes swelling and distortion of the cells without fixation of the cells. In the resulting necrosis of tissue, detail is entirely lost. Alcohol is a very poor substitute for Zenker's fluid or formalin. It fixes poorly and it causes too much hardening of the tissue as well as marked shrinkage of cells and stroma.

CLINICAL EXAMINATION

Adequate clinical information should accompany the tissue submitted, in order that the pathologist may weigh properly the evidence disclosed by the gross and microscopic examinations of the specimen. Ewing, who owed much of his ability as a master tissue diagnostician to his ability to correlate what he saw in the tissue with the clinical facts in the case, insisted at all times on clinical information. A minimum should be: the age and clinical history of the patient, the location of the lesion, its size and appearance, and the possible diagnosis. Far too often the pathologist receives a bit of tissue with only the name of the patient, often badly written at that, and no other data on which to begin. Pathology has not reached and never will reach the stage where diagnosis can be made in such circumstances. As an example, great difficulty has been encountered in recent years in the interpretation of uterine curettings because of the common usage of estrogenic substances in the treatment of menopausal disorders. In some cases the hyperplastic changes produced simulate carcinoma very closely, so that grave errors may occur unless the pathologist is informed of the estrogenic treatment. Information as to this type of treatment should be submitted with curettings.

FROZEN SECTION

In only a few clinics or hospitals is frozen section routinely done on surgical and biopsy specimens. The vast majority of tissue diagnoses throughout the country are made on paraffin sections, since nearly all pathologists find these more satisfactory. Rapid frozen section is of utmost importance when the patient is on the operating table and further operative procedure is dependent upon the microscopic diagnosis. This is especially true in breast and soft tissue tumors. However, probably most pathologists of long experience have had occasion, upon examining permanent paraffin sections, to revise diagnoses which they had made earlier on the basis of rapid frozen sections. Many an error is made on uterine curettings or other small bits of tissue, in an endeavor to report frozen section diagnoses within a few minutes. It is important, therefore, that a pathologist making a frozen section set aside enough of the specimen to imbed in paraffin later. By use of the Technicon or other rapid imbedding processes, paraffin slides are prepared within 24 hours in most laboratories, and in less time when special service is necessary.

GRADING OF NEOPLASMS

For years, pathologists have classified tumors of low, moderate or high degree malignancy on the basis of cell structure, organization of the tumor, variation in size and shape of the cells, chromatin content of nuclei, presence of mitoses and other factors. In this country Broder's numerical classification has been widely accepted and serves a useful purpose as a standard of grading, if allowance is made for some variation between the figures of various observers. Grade I, in which the cells are well differentiated and resemble closely the mother type, represents the lowest grade of malignancy. Grade IV is the most malignant type. In tumors of this grade, marked anaplasia and evidence of active growth is present, with complete or nearly complete lack of differentiation. In many cases in tumors of this grade it is impossible to determine whether a cancer is of squamous or glandular origin, since the cells are so anaplastic that they do not show characteristics of the cells from which they arise. Grades II and III occupy positions in between these extremes, and in these groups the vast majority of carcinomas fall. Some pessimistic pathologists are apt to call an adenomatous polyp of the colon or a papillary tumor of the bladder a Grade I carcinoma, whereas in the opinion of others these would be considered benign. For this reason some clinics report more cures of cancer than others. If one notes what happens to the cases in Grades II, III and IV in comparable reports, a more reasonable estimate of efficacy of treatment can be obtained. Grading of sarcomas, melanomas and maligancies other than carcinoma is much more difficult and the older, non-numerical classification of low, moderate, or high degree of malignancy is most commonly used.

SUMMARY

The fate of a patient and the choice of methods of treatment depend largely on what is done when the patient is first seen. If a biopsy is done it should be done after careful planning. Adequate tissue obtained by proper instruments should be removed. If the tissue is not removed in a hospital with a pathologist on duty, it should be promptly fixed in suitable solution and promptly sent to the pathologist along with sufficient clinical information to guide him in arriving at a correct microscopic diagnosis. Teamwork of this type will certainly pay dividends in making more accurate diagnoses and in saving lives.

Biopsy all tumors unless there are definite contraindications.

***Plan* the biopsy carefully.**

***Teamwork* with pathologist essential.**

(a) Get adequate, representative tissue.
(b) Don't squeeze, shred or burn it.
(c) Fix tissue properly and promptly.
(d) Supply a good clinical history. Repeat biopsies if necessary.

Chapter V. Radiation Therapy of Cancer, by R. R. Newell, M.D., will appear in this section in the September issue.

California MEDICINE

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EDITORIALS

Current Trends in Research on Eclampsia

In dealing with eclampsia, a serious disease of unknown etiology, it seems proper to pause occasionally and to take stock of the direction in which current research efforts lead us. This is especially true when therapeutic implications are involved. There are four lines of investigation which deserve careful attention: (1) alterations of renal function leading to edema, (2) methods of protecting the liver against damage, (3) the cause and prevention of the convulsions, and (4) the role of the placenta in causing generalized vascular damage and multiple small thromboses.

The newer methods of investigating renal blood flow and glomerular filtration rates indicate that in preeclampsia and eclampsia there is not a renal "ischemia," but rather a slight increase in the rate of blood flow. The filtration of urine, on the other hand, is definitely impaired. The cause of this may be related to the diffuse thickening of the glomerular (filtering) membrane observed histologically. The only means that the body has of increasing the amount of urine formed, and thus preventing anuria, is either by raising the head of pressure within the glomerulus or by reducing the osmotic pressure of the blood. Thus the hypertension and the hypoalbuminemia associated with eclampsia may be compensatory mechanisms in some way effected by the kidneys in order to prevent such a catastrophe. Attempts to lower the blood pressure with drugs which further reduce the formation of urine (as with nitrates, veratrum viride, etc.) may be unwise. *The net effect of the reduced filtration rate associated with eclampsia is to increase the amount of sodium chloride (and water) obligatorily reabsorbed by the proximal tubules*, and this now appears to be one of the primary causes of the edema. Such a suggestion substantiates the well-known clinical observation that improvement of preeclampsia rarely occurs until diuresis is established. We should redouble our efforts to promote the excretion of salt and water by the rigid restriction of sodium intake, the displacement of sodium by the judicious use of such salts as ammonium chloride, and by supplying sufficient water to prevent undue concentration of the urine. The latter is satisfactorily done by the administration of dextrose in distilled water by vein.

Current researches dealing with protection of the liver against toxic damage stress the desirability of such lipotropic factors as methionine, choline, lipocaic and inositol, in addition to the usual therapy with carbohydrates. Protein digests containing methionine would have the advantage of allowing the synthesis of protein, much needed in eclampsia, and could be administered orally or even by intubation if necessary. To date, there are no reports on the value of such materials in eclampsia, nor is there a commercial protein digest available which is sufficiently low in sodium (though one may soon be marketed). *The administration of essential amino acids and choline to patients with severe preeclampsia or eclampsia may become a valuable adjunct to our therapy.*

We call now upon the encephalographers who inform us that about ten per cent of the population at large have cerebral dysrhythmia; that these are the individuals who are most subject to epilepsy or to post-traumatic convulsions; and that two-thirds of women who give a history of eclampsia (instead of the expected ten per cent) have such abnormal brain wave patterns. *Inasmuch as about 10 per cent of women with preeclampsia develop convulsions, it is possible that these individuals are the unfortunate ones genetically endowed with cerebral dysrhythmia.* This obviously suggests that the administration of an anticonvulsant drug more potent than the barbiturates (such as sodium 5, 5-diphenyl hydantoinate

Dilantin) in all cases of non-convulsive toxemias early in the course of the disease may lower the incidence of actual eclampsia. It may be years, of course, before we obtain the report on a series of cases sufficiently large to be of significance.

Lastly we come back to a theory of Dienst's in 1912, the work of Obata in 1919, and the recent repetition of Obata's work by Schneider showing that the principle of the human placenta which is lethal to animals upon intravenous injection is thromboplastin. Human serum contains an "antithromboplastin," and we recall that Obata, and later Dieckmann, found that women with preeclampsia and eclampsia have a reduced amount of this inhibitor substance in their serum. *The slow liberation of unopposed thrombokinase into the maternal circulation by the placenta* (one of the richest sources of this substance in the body)—*under some such stimulus perhaps, as "ischemia" of the gravid uterus—might allow a slow deposition of fibrin upon the intima of small blood vessels, cause capillary thromboses and periportal hepatic lesions, and thus account for at least some of the major pathologic changes of eclampsia.* For direct proof of this hypothesis, it remains to quantitate the amounts of circulating thromboplastin and its inhibitor in the plasma of eclamptic women. The biocatalyst, thrombokinase, is a molecule of such tremendous size that it might be expected to remain in the circulating blood for many days after delivery, thus accounting for the occurrence of continued damage in the immediate puerperium. An obvious specific "antidote" for thromboplastin is heparin, and the few cases in which it has been used warrant some enthusiasm for the future. The obvious dangers of heparinization of a pregnant or puerperal woman, on the other hand, should be sufficient to warn all practitioners against its use until the possible value of such therapy is well established by rigidly controlled clinical experiments in some research institution.

The A.M.A. Centennial

Celebration of the first century's existence of the American Medical Association was completed in Atlantic City in mid-June and from the scientific side of the event there seems little to be desired. Starting with an interdenominational religious service, carrying on through a galaxy of visiting dignitaries from all corners of the world, the meeting presented a series of scientific papers and scientific and technical exhibits which could easily rate top billing in any scientific gathering the world has yet seen. The planners and providers of such a program merit the respect and the thanks of the entire medical profession, not only in this country but in both hemispheres.

On the business side of the meeting, the side for which the California Medical Association regularly sends its delegates into action, there is room for both rejoicing and sorrow. On the happier side, California's Dr. Dwight H. Murray was elected to a full five-year term as a Trustee of the A.M.A. in a voting contest which favored the Napa physician by a four-to-one margin. This is ample evidence of respect for the character, capacity and sound judgment of our fellow practitioner, as well as for the integrity of the entire California profession. Other A.M.A. election returns tend to bear out this assay of the respect for sound, progressive policies which Californians have long espoused in national medical circles.

The reverse of the picture shows an unsettled state of public relations of the A.M.A., a condition aggravated by the unfortunate events leading up to the resignation of both the outside public relations counsel and the public relations expert employed as an executive assistant to the secretary-general manager of the Association. Further provocation on this score came from a renewed approval given by the House of Delegates to the National Physicians' Committee despite an evident disposition on the part of a large minority in the House for the A.M.A. to do its own job in the public relations field.

Out of these decisions, which in the democratic manner are binding on all members until and unless reversed, there comes one lesson which we hope will not be lost to sight. The important part of the entire public relations matter lies in the over-all problem and not in the personalities involved. The public relations counsel and expert have turned in their resignations; the public relations problem remains. No matter what events brought about these resignations, it is obvious that these individuals performed a valuable service during their terms with the A.M.A. and it is sincerely to be hoped that their contributions toward clearer and better public relations will not be discarded.

In the Rich report released last year and in the programs developed by the counsel firm and the public relations expert in the A.M.A. office, there are suggestions of value to American medicine. These should and must be utilized, salvaged from what might otherwise appear to be a useless wreck. Used objectively, they may well prove to be the beacon for guiding American medicine into paths of true public relations, true respect by and for the American public.

The rider may have come a cropper but that is no reason for shooting the horse.

CLINICAL CONFERENCE

Tetany in Postoperative Thyroid Cases

FROM THE STAFF ROUNDS OF THE MT. ZION HOSPITAL, SAN FRANCISCO, MARCH 7, 1947

DR. FRANKLIN I. HARRIS*: The subject that we are discussing today has been chosen because of the recent occurrence within one month of the two cases of tetany following thyroidectomy. Until this past month we had not seen a like case in this hospital for at least 15 years.

PRESENTATION OF FIRST CASE BY DR. KENNETH MOOSLIN, INTERN: The patient was a 25 year old white married female, who was admitted on February 1, 1947, for a thyroid operation. She had had a goiter for 12 years and in the two months prior to entry had developed symptoms of toxicity of it. On February 4 sub-total thyroidectomy was done. During surgery the four parathyroids were demonstrated. That evening the patient complained of tingling and numbness of the extremities, but Chvostek's and Trousseau's signs were negative. The symptoms continued; on the third postoperative day the patient showed a positive Chvostek's sign and the blood calcium was shown to be 6.8 mg. per cent (normal 9-11). She was placed on a regime which included calcium gluconate orally (2 gm. q.i.d.) and by vein (10 cc. of 10 per cent solution b.i.d.); dihydrotachysterol (½—1 cc. t.i.d.); and ammonium chloride (2 gm. q.i.d.). Calcium levels were followed by examinations of the blood and urine (Sulkowitch).† The blood calcium gradually increased and the urinary output of calcium gradually decreased to normal. The patient was discharged on the tenth postoperative day, asymptomatic by both clinical and laboratory study. She continued to take Hytakerol on discharge and was instructed in the technique and significance of the Sulkowitch test.

DR. HARRIS: The operation in this case was technically a fairly easy bilateral sub-total thyroidectomy. The parathyroid glands were demonstrated to the house officers assisting me. On the first and second postoperative days, when the patient started complaining of numbness and tingling, it was felt that she was "merely nervous" and that there was some element of hysteria. However, on the third day, simultaneously with the blood chemistry studies which were ordered, there appeared a strongly positive Chvotek's sign. By this time we were all convinced that her so-called nervousness and tingling were definite evidence of a severe calcium deficiency and that immediate treatment should be instituted.

DR. GERSON R. BISKIND‡: In the specimen removed, one parathyroid gland was demonstrated. We routinely examine thyroid tissue for parathyroid glands, but sometimes they are extremely difficult to demonstrate.

PRESENTATION OF SECOND CASE BY DR. MILTON PEARL, ASSISTANT RESIDENT: A 29-year-old female was admitted complaining of loss of weight, tiredness, weakness, and crying spells. Her BMR was +33. She was prepared with Lugol's solution and thiouracil for ten days, after which a bilateral subtotal thyroidectomy was done. During the procedure one parathyroid gland was removed. On the first day postoperatively she complained of numbness and tingling. Chvostek's sign was doubtful. She was given 1 gm. of calcium gluconate intravenously, 50,000 units vitamin A daily and 15 gm. of calcium gluconate t.i.d. by mouth. On the second postoperative day the Chvostek's and Trousseau's signs were negative, and she was subjectively asymptomatic.

On the third postoperative day I heard the patient scream, entered the room to find her unconscious. She lay in complete opisthotonos; the arms were adducted and the hands in complete carpopedal spasm. She was apneic and exhibited severe cyanosis. Within 30 seconds she was given 0.5 gm. of calcium chloride intravenously. Before the injection was completed, she had relaxed, was breathing well, and had completely regained consciousness. She had no recollection of the attack. The only residual evidence of the attack was the presence of a right subconjunctival hemorrhage. Calcium was administered intravenously when either the Chvostek's or Trousseau's sign was positive and when the Sulkowitch test showed low calcium excretion. Calcium gluconate 15 gm. t.i.d., viosterol 100,000 units daily, Dihydrotachysterol 1 cc. t.i.d., and ammonium chloride 1 gm. t.i.d. were administered. She remained relatively asymptomatic. A blood calcium on the fifth postoperative day was 10.5 mg. per cent. She was discharged on the eighth postoperative day.

DR. JACOB O. SMITH*: At home this patient ran her own Sulkowitch tests and regulated medication accordingly. She gradually reduced the dosage of the above drugs; approximately one month after her discharge she was perfectly well, had stopped all her medication and clinically did not present any evidence of tetany. Her blood calcium was normal at this time. It is almost one year now since the operation, and her blood calcium is still normal. She

* Chief, Department of Surgery.

† The Sulkowitch test requires merely the addition of an alkaline oxalate solution to the urine. If calcium is present, a white precipitate forms.

‡ Chief of Pathology and Director of Clinical Laboratory.

* Adjunct in Surgery.

has no symptoms whatsoever and has not taken any more medication.

DR. KALMEN A. KLINGHOFFER†: The first patient developed tetany when only one parathyroid gland was removed. One would expect the four remaining parathyroid glands to take care of the essential function of these glands. It is probable that the symptoms were the result of trauma and temporary impairment to the blood supply of the four remaining glands. Some patients continue to require treatment for the symptoms of parathyroid insufficiency, whereas in others the disability is transient.

It is usually routine to diagnose tetany if the serum calcium falls and to control the treatment by the level of the serum calcium. One should remember, however, that the total serum calcium level varies with the serum protein level and that tetany is affected only by that portion of the calcium not bound to protein. If a patient does not have manifest tetany, one can demonstrate latent tetany by having the individual overventilate. Dehydration, too, makes the patient more susceptible, and the tetany manifest.

The management of Dr. Harris's patient was rather easy, as the tetany was only mild and the severe carpopedal spasm demonstrated by Dr. Pearl in the second patient was not present. The first patient was given calcium gluconate, viosterol, and dihydrotachysterol and the serum calcium gradually rose to 10.5 mg. per cent. The dihydrotachysterol dosage was then reduced. It has been customary to recommend a diet low in milk in patients with tetany because of the large amounts of phosphorus present; but with the other therapeutic aids, I do not think it necessary to subject the patient to an abnormal dietary regime. This patient tests her own urine. Serum calciums are determined at infrequent intervals.‡

Dihydrotachysterol was discovered 15 years ago by Holst and is more effective than Calciferol but is rather expensive. Therefore, as a patient improves, this is the medication first reduced. Calcium gluconate is given three times a day in tablespoonful doses; if medication is urgently required, it or calcium chloride should be given intravenously. Parathormone acts similarly to mobilize calcium, but the action is not immediate and injections have to be repeated at least once daily. It probably has no role in therapy now except in cases of parathyroidectomy for parathyroid adenoma.

DR. JOHN J. SAMPSON§: Doesn't tetany occur more promptly following total thyroidectomy?

DR. HARRIS: It occurs with comparative rarity. Dr. David Berlin of Boston, who did much of the fundamental anatomical dissection in conjunction with this radical operation, stated that he had seen cases in which four to six parathyroids had been removed without clinical evidence of tetany.

DR. SMITH: Very frequently the symptoms are mild until two to three days after thyroidectomy. At the Mayo Clinic one out of ten patients developed some symptoms. I personally have had at least six to eight patients with postoperative tetany, all of which cleared under treatment in from two days to one month, usually all within several days after symptoms developed. I recall only one patient whom I saw about two years after thyroidectomy in whom tetany had persisted. Apparently two parathyroid glands had been removed at the time of operation. From all I could gather, the patient had received intensive therapy but continued to have symptoms. The blood calcium hovered around 8 mg. per cent. In the past five years the symptoms have been kept under control with approximately 8 gm. of calcium gluconate daily and 50,000 units of vitamin D two or three times weekly. There was no response to parathormone or AT 10. I would like to suggest that this method of treatment be applied to postoperative tetany cases immediately after the acute episode has been regulated in the usual manner.

DR. MILTON GORDON*: The number of parathyroid glands that can be demonstrated depends to a large extent on the visual acuity and experience of the surgeon. There is a direct relationship existing between the number found and the time spent in the search for them. Although four parathyroids are usually found, we must call this an average, rather than normal, since variations in number and position are common occurrences. Eight have been reported and, in one instance, six have been noted on the same side. The superior parathyroid glands are more constant in position, whereas the inferior glands vary greatly in position. They have been found on the posterior aspect of the trachea and even within the chest. However, wherever they are located, they will always be noted along one of the branches of the inferior or superior thyroid arteries.

Dr. R. Millzner, who has been studying the parathyroids since 1926, found, in cadavers, 30 per cent of the specimens to have one or more parathyroids on the true anterior or antero-lateral portions of the thyroid capsule. He has seen two but never three parathyroids removed at operation without some signs and symptoms of tetany arising.

A more common cause for parathyroid deficiency is injury to the glands, rather than removal. Each parathyroid receives only one small artery which usually is a branch of the inferior thyroid or an anastomosing ramus between the inferior and superior thyroid arteries. The superior parathyroid glands sometimes receive their blood supply directly from branches of the superior thyroid artery. All parathyroid glands have end artery supplies without direct collateral from any of the surrounding tissues. If the artery to a parathyroid gland is injured during operating, the gland will act as a graft; and unless it takes or compensation occurs, symptoms of deficiency will become manifest. Intact parathyroid glands often hypertrophy to compensate for injured

† Adjunct in Medicine.

‡ This patient discontinued all therapy April 15, 1947. On May 8, 1947, she was asymptomatic and all examinations were normal. The serum calcium level was 10.4 mg. per cent.

§ Chief, Division of Medicine.

* Assistant Resident in Surgery.

ones. It is therefore recommended that as much capsule as possible be permitted to remain during thyroidectomy. Too diligent search for the parathyroids may embarrass the blood supply and lead to difficulty.

DR. HARRIS: I am convinced that the demonstration which I made of the parathyroids probable interfered with the minute circulation to these important structures. I assure you that next time I will not demonstrate so conscientiously to my house staff.

I would like to ask why calcium therapy is not used more extensively in medical practice for many of the minor complaints of tingling, numbness and other forms of parasthesia. The striking effects of calcium therapy in this patient with a serious deficiency would seem to me to indicate that it could be used with value in many similar minor medical complaints that clinically simulate calcium deficiency.

DR. SAMPSON: In cases of hyper-ventilation, calcium can be used on an empirical basis. We do not like to use it indiscriminately, since many of these cases have a psychic element. There is also the danger of overdosage of calcium, since it is not a completely innocuous drug. I recall one case in which it caused death.

Clinical-Pathological Conference*

A 55-year-old Portuguese lumber mill worker was admitted to the Sonoma County Hospital August 27, 1946, with a complaint of hot, swollen, painful joints, a condition which had existed for two months.

Present Illness: The patient had been well until two months before, when he noted constant dull aching pain in his neck and right shoulder which was aggravated by movement. This pain subsided spontaneously in three days, to reappear at intervals of a few days successively in his left shoulder, right hip, knees and ankles. The joints would swell, become hot and painful to touch and to movement. During these episodes he also noted chilly sensations in the afternoon followed by a feeling of increased warmth which he interpreted as fever.

Past History: The patient had had six similar attacks at several year intervals, the first and most severe when he was 35 years of age. He had never been examined or hospitalized, but he declared that they were identical with the one which brought him to his hospital admission.

Systems: He had lost his appetite during the past two months and had also lost 40 pounds in weight.

Operations: None.

Injuries: None.

Past Illnesses: Gonorrhea at 20 years of age. Malaria at 22 years of age.

Physical Examination: The patient was a tall, asthenic, negroid male who appeared to have lost weight recently but was in no acute distress.

Temperature was 37.8 degrees C., pulse 100, respirations 20, and blood pressure 128/58. The only important physical signs were in the chest and joints. The respiratory excursions were equal and full. Moist rales were present in the right central lung field. A rough systolic and a soft diastolic murmur were heard in the fifth intercostal space in the midclavicular line. The aortic sound was absent. Both knees and the right ankle were swollen and painful on motion but were not hot, red or painful to touch at the time of admission.

Red blood corpuscles numbered 4,450,000; hemoglobin was 88 per cent Sahle; white blood cells numbered 17,500; polymorphonuclear leukocytes 84 per cent (12 per cent banded forms); lymphocytes 14 per cent; monocytes 1 per cent; eosinophiles 1 per cent. Urine: specific gravity 1.017; straw; turbid; pH 6.5; sugar, trace; acetone 0; albumin 0; casts 0; red blood corpuscles, occasional; white blood cells 3-4 h.d.f. Sedimentation rate (Wintrobe) corrected 16 mm. hour. Blood Kahn and Kline, negative; blood culture, no growth in 14 days. Widal, paratyphoid A and B, undulant fever and tularemia agglutinations all were negative. An A. P. film of the chest showed the lungs to be clear and the heart within normal limits of size and shape. An electrocardiogram showed left axis deviation with slight evidence of myocardial damage.

The patient was placed on bed rest, a cardiac diet, and was given sodium salicylate. On the third hospital day he began to show an afternoon temperature rise to 38.8 degrees C., and daily blood cultures were taken until the fourteenth day, all of which showed no bacterial growth. During this time the swelling and pain in the knee and ankle had subsided but there occurred a swelling of the right thumb, which was tender, red and hot. The patient's skin, mucous membranes and nail beds were examined daily for nodules and petechiae, but none were found.

At this time the patient complained of shortness of breath, a feeling of weakness and of a sore mouth. His tongue was red and smooth. A blood count on the sixteenth day revealed 2,870,000 red blood corpuscles, hemoglobin of 67 per cent, color index of 1.2 with marked anisocytosis and poikilocytosis, and 15,000 white blood cells with normal distribution. The polymorphonuclear leukocytes showed hypersegmentation, but no megaloblasts were seen. Gastric analyses on two occasions with histamine showed no free hydrochloric acid. Sedimentation rate remained high. Salicylates were discontinued and daily blood counts were made.

On the thirtieth hospital day the blood count was 2,860,000 red blood corpuscles, 78 per cent hemoglobin, color index, 1.39, reticulocytes 0. Liver extract was given parenterally and an immediate reticulocyte response to 8.5 per cent was noted. The blood count and hemoglobin returned to normal, where it remained; the sore mouth disappeared, and the patient felt strong again, but his temperature continued to rise daily to 38.5-39 degrees C. In spite of negative blood cultures, penicillin was begun in doses of 20,000 units every three hours. The temperature returned to normal and the sedimentation rate came within normal limits. This treatment was continued until a total of 12,000,000 units of penicillin was given. When it was stopped the patient's temperature came up again each afternoon, and within a week he developed signs of cardiac decompensation with dependent edema, enlargement of the heart shadow and moist rales in the lungs. He was digitalized and penicillin was started again, but he failed to respond and died on the eighty-sixth hospital day. An autopsy was performed within three hours.

* One of three Clinical Pathological Conferences held at the 76th Annual Session of the California Medical Association, April 30-May 3, Los Angeles.

DISCUSSION BY CLINICIAN

DR. BRUCK†: When the patient in this case was admitted to the hospital he complained of hot, swollen, painful joints. We find that he had had six similar attacks previously at intervals of several years. The first and most severe attack was at age 35, twenty years before he entered the hospital. He had never been examined or hospitalized previously but he declared that the previous attacks were identical to the one that brought him to the hospital. We must consider what these attacks might be. Before that, we should know that he had been down for two months with the latest attack. This started with dull aching pain in the neck and right shoulder which was aggravated by motion. The pain subsided spontaneously after three days, only to reappear some days later in the right shoulder, left knee and ankle. These joints were swollen, hot and painful to touch and movement. During these episodes the patient had chills. In the afternoon he felt warm and thought that he had fever.

We have, then, a story of acute, recurring joint disease, the most likely diagnosis being rheumatic fever. As we go on through his story we find that the patient lost appetite and also lost about forty pounds in weight in the two months before entry into the hospital. That was before the beginning of the latest illness.

He had had gonorrhea at the age of twenty years, 35 years ago and 15 years before his first attack of joint disease.

Physical examination on entry to the hospital showed him to be rather tall and thin with obvious evidence of weight loss. He was not in acute distress. Blood pressure of 128/58 is worthy of note in view of the heart findings later.

Respiratory excursions were equal. Moist rales were present in the right central lung field. There was a rough systolic and a soft diastolic murmur heard in the fifth intercostal space in the left midclavicular line.

The other important physical findings were in the joints, which were swollen and painful on motion, although at the time of examination they were not hot or red or painful to touch.

Laboratory work showed a blood count with 4,450,000 red cells and 88 per cent of hemoglobin (Sahle); white blood cells numbered 17,500; polymorphonuclear leukocytes were 84 per cent, of which 12 per cent were banded. This probably denotes pyogenic infection of some sort. Monocytes were 1 per cent which is essentially within normal limits. The urine examination, showing a specific gravity of 1.017 with a trace of sugar, apparently was not repeated and we find no further evidence of sugar at any time. Thus, we do not know whether or not the patient had diabetes. There were occasional red corpuscles in the urine, which is a finding worthy of note. There were occasional white cells. The blood cell sedimentation rate was corrected to 16 millimeters per hour. The blood culture showed no growth in 14 days. A film of the chest showed the lungs to be clear. The heart was said to be within normal limits in size and shape—this in spite of the fact that the patient had rales in the middle right lung field. It is worthy of note that the heart was said to be normal in size at this time because of the findings which appeared in his heart in his last hospital days. The electrocardiogram showed a left axis deviation with some evidence of myocardial damage. Thus far, the physical examination and the laboratory examination seemed to denote that this individual had probably had rheumatic fever in the past with rheumatic heart disease.

The patient was placed on bed rest, with a cardiac diet, and was given sodium salicylate. At that time he began to show an afternoon temperature rise at 38.8° C. Daily blood cultures were done from the third to the fourteenth day,—that is cultures were taken each day for eleven days, and none of these showed bacterial growth. During this time the swelling and pain in the knee and ankle had subsided but there had occurred a swelling of the right thumb. This was probably due to rheumatic fever, although swelling in the joints of fingers and thumbs, in my experience is not too common.

The patient's skin, mucous membranes and nail beds were examined daily for nodules and petechiae, but none were ever found. One could almost make up one's mind however, in spite of the absence of these evidences of embolism, that there must be a reinfection of the heart valve in question.

About this time the patient complained of shortness of breath, of weakness and of a sore mouth. About this time it was found that his blood count had dropped on the thirtieth hospital day to 67 per cent of hemoglobin with 2,860,000 red cells and 17,000 white cells. This part of this case is somewhat disturbing to me at least, because it would seem to denote that this individual had developed deficiency disease in addition to his infection during his hospital stay. The blood count resembles that of pernicious anemia with the exception of the increased white cells. Color index was 1.39 and it is stated that reticulocytes were not seen. With all of the factors in mind, one must consider a pernicious type of anemia. This view is further fortified when we note that there was a reticulocyte response to 8.5 per cent after the administration of liver extract, which response is in considerable amount. After administration of liver extract for a short time the blood count and hemoglobin returned to normal, where they remained. The sore mouth disappeared and the patient felt quite strong again. However, his temperature still remained high at 38.5 to 39° C. Despite the negative blood cultures penicillin was started and he was given doses of 20,000 units every three hours. This treatment continued until about 12,000,000 units were given, following which the patient's temperature receded, but when the penicillin was stopped the temperature went up again. Within about a week signs of cardiac decompensation de-

† Dr. Edwin L. Bruck, Clinical Professor of Medicine, University of California Medical School, San Francisco.

veloped with dependent edema, enlargement of the heart shadow and moist rales in the lungs. This is evidence of left ventricular failure. At this point penicillin was started again and the patient was digitalized, but these drugs proved to be of no avail; the patient did not respond, and died his eighty-sixth hospital day.

As we consider what must have happened to this patient, I think that the logical conclusions are: First, this individual had had recurrent rheumatic fever, or at least an acute joint disease which we must assume was rheumatic fever. Then, on top of his rheumatic valvular disease which followed the rheumatic fever, he developed another disease. The most likely thing of course, would be reinfection of the aortic valve. Ordinarily however, after reinfection of the heart valve, organisms should be present in the blood culture, but they were not. In addition to this, as I have said earlier in the discussion, he has another thing which bothers one. That is the unusual type of anemia which we must conclude was on a deficiency disease basis, because it apparently got well after the administration of liver extract.

I must repeat here that it is unusual for a reinfected heart valve to persist without a positive blood culture.

With a story like this, one must consider one other thing,—namely Libman-Sachs disease, but I must admit that this condition probably was not present as all of the urinary findings present in this condition were, in this patient, entirely absent.

I believe that the suddenness of his cardiac decompensation and the rather abrupt manner of death, preceded by the sudden increase in the size of his heart, is due to some abrupt change in the aortic valve such as splitting, perforation, rupture—any one of which could be due to the ulcerative process which we assume was going on.

To sum up then, my guess would be, and in the absence of a positive blood culture it must be a guess, that this individual had reinfection of his aortic valve which had previously been damaged by rheumatic fever; that when he came into the hospital he was suffering from rheumatic fever along with the reinfection of his valve. I also believe that during the course of his disabling disease, in the hospital, he developed a deficiency disease in his stomach and bone marrow and that this deficiency disease resembled pernicious anemia in some respects in that it was apparently alleviated by the administration of liver extract.

We believe that some catastrophe to the aortic valve preceded his death and we would suggest the possibility of either rupture or some other process due to ulceration of the valve.

DISCUSSION BY PATHOLOGIST

DR. DENNIS*: Before the autopsy was performed, a careful search was made of the skin, the mucous membranes and the nail beds in an attempt to discover petechial hemorrhages or evidences of embolic phenomena. None were found. The autopsy findings of interest were confined to the heart, the gastric mucosa, the liver, and the kidneys.

The pericardial sac appeared normal. Its surfaces were smooth and glistening, and there was contained within it approximately 10 cc. of clear, straw-colored fluid. The heart was just over the limits of normal for size, weighing 418 grams. No gross lesions were found in the right chambers of the heart. The left atrium appeared normal. The mitral orifice was patent, and the leaflets of its valve were intact and showed no gross disease. No gross lesions were seen in the myocardium of the left ventricle. The aortic orifice was distinctly narrowed, measuring only 6.5 cm. when opened to its fullest. There was fibrosis and contracture of the commissures. One valvular leaflet was completely calcified and immobile. On another leaflet there was a firm, verrucous vegetation characteristic of rheumatic valvulitis, and the right cusp contained upon it a fairly large gray-pink, firm vegetation which was characteristic of those seen in subacute bacterial endocarditis. This process had eroded through the valvular leaflet, and, together with the valve, was flapping free in the blood current. There was then, indeed, aortic insufficiency, as Dr. Bruck suggested.

Both kidneys contained several infarcts, some being old and depressed and partially organized, while others were swollen, red and violaceous. On opening the kidneys no obstruction of the calices or pelves was observed, but the infarcts were seen to occupy various positions in the cortices.

The gastric mucosa was stippled with innumerable petechial hemorrhages, some of which were older than others. The gastric mucosa was, therefore, atrophic and thin in the areas of hemorrhage but appeared to be of normal thickness in the areas between the hemorrhages.

Both chronic and acute passive congestion were found in the liver. These processes were so extensive that the liver cords were almost indistinguishable in most of the sections studied.

Microscopic Examination: There were present in the myocardium and the left ventricle numerous stellate areas of scarring and fibrosis, evidence of past insults to the myocardium. In addition to these older lesions, there were present a fair number of perivascularly located lemon or oval shaped lesions confined to the collaginous connective tissue between muscle fibers. These had swollen the muscle fibers out of shape and consisted of central areas of necrotic fibrous connective tissue, about which were found numerous lymphocytes and a few multinucleated giant cells. Aschoff cells were also seen in considerable numbers.

The gastric mucosa showed in the area of hemorrhage almost complete atrophy of the gastric glands and an abundance of hemorrhage in the mucosal and submucosal areas. The mucosa between the petechial hemorrhages was tall and appeared normal and contained numerous chief and parietal cells.

* Dr. R. L. Dennis, Department of Pathology, Sonoma County Hospital, Santa Rosa.

The microscopic appearance of the liver has been described.

The anatomic diagnoses of importance then were:

I. Rheumatic pancarditis, recurrent
   (a) Aortic stenosis
II. Subacute bacterial endocarditis
   (a) Aortic insufficiency
III. Infarcts, multiple, gastric mucosa, kidneys
IV. Chronic and acute passive congestion, liver

The immediate cause of death was acute pulmonary edema due to cardiac decompensation and failure.

An additional word needs to be said about the anemia. It is not surprising that Doctor Bruck was confused regarding the anemia, as the anemia that usually accompanies subacute bacterial endocarditis is of the secondary variety, that is, a hypochromic, normocytic anemia. Here there had developed during the course of the patient's illness a condition that had all of the appearance of an idiopathic Addisonian anemia. When the sections were viewed, however, the gastric mucosa was not seen to be uniformly atrophic, as is the case in idiopathic Addisonian anemia, and it must be concluded that the anemia was a simulated pernicious anemia resulting from the extreme degree of chronic and acute passive congestion of the liver.

If one remembers the modus by which these anemias arise, he will recall that there is present an extrinsic factor in the food which when taken into the body combines with an intrinsic factor elaborated by the gastric mucosa. These two factors combine and are stored in the liver and constitute the antianemic factor which is always available in the normal state for the bone marrow and is used apparently in some way to bring about the complete maturation of the red blood cells. When any one of these factors is deficient or absent, maturation of the red blood cells appears to be arrested at the megaloblastic stage, giving rise to a hyperplasia of the bone marrow and to an accumulation of great numbers of megaloblasts in the bone marrow, many of which eventually find their way into the peripheral blood stream. It is not believed, therefore, that this was an idiopathic Addisonian anemia, but one that arose on the basis of deficiency due to infarcts in the gastric mucosa, resulting in turn from emboli from the diseased heart valve.

It will be noted that in the photomicrographs shown no evidence of bacterial accumulations was seen, and blood cultures were never positive during life. It must be stated, therefore, that the vegetation from the heart valve was sectioned, and numerous typical cocciform, gram-positive organisms were seen.

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NOTICES AND REPORTS

The Physician Looks at the 1947 Legislative Session

The Medical profession was almost 100 per cent successful in its 1947 Legislative program. No legislation inimical to the public health or the maintenance of high professional standards was passed. On the affirmative side many bills either sponsored or approved by the profession were enacted into law. When the gavel fell at midnight, June 23, it ended one of the longest sessions in the history of California's legislatures, and the busiest session for the medical and allied professions.

During the 170 calendar days of the 1947 session, 4,317 bills were introduced. Careful scanning of each of these proposals, by the Sacramento office of The Public Health League of California, turned up a total of 239 bills that required constant watching. While compulsory health insurance was the top issue and would have made up a full program in itself, a myriad of other issues seethed through the long session. Through the cooperation of individual members of the profession who kept their legislators informed, it was possible to meet all these issues successfully. There were a few sponsored or approved measures which failed, but these were not of vital concern and may be pressed at future legislative sessions.

HEALTH INSURANCE

In his opening message to the Legislature, Governor Warren again demanded enactment of a compulsory health insurance bill. His demands were presented in Assembly Bill 1500 by Assemblymen Wollenberg and George D. Collins of San Francisco, and Senate Bill 788 by Senators Salsman of Palo Alto, Jespersen of San Luis Obispo and Dillinger of Placerville. The press and Capitol observers were quick to predict that this would be the top "fight" of the 1947 session. When the Senate bill was called for committee hearing its sponsors were given ample time to present their arguments. Business, industry, agriculture, insurance groups, the hospital association and organized medicine presented their opposition and the committee took the bill "under advisement." Two weeks later it was tabled by the committee without a dissenting vote, upon motion of Senator Keating of San Rafael, seconded by Senator Parkman of San Mateo.

Committee hearings on the Assembly bill were delayed (by the sponsors) until the closing weeks of the session. After hearing the arguments pro and con the Public Health Committee of the Assembly, on motion of Assemblyman McCollister of Mill Valley, voted to postpone action on the bill and refer it to an interim committee for study—if such a committee should be created. No such committee was created.

Defeat of these bills did not dampen the insistence of Governor Warren and he stated in a press conference: "Objections to health insurance have become threadbare and have lost their force. . . . We most certainly will get a health bill while I am governor."

Thus it appears certain that the issue will again be revived at the next session of the Legislature.

The C.I.O., which sponsored a bill in 1945, did not offer a proposal in the 1947 session.

ANTIVIVISECTION

Antivivisectionists waged a hot battle for enactment of two bills which struck at animal experimentation. The first of these, by Assemblyman Kilpatrick of Los Angeles, was tabled in committee. The second, by Assemblyman Evans of Los Angeles, was amended numerous times and then dropped by its sponsor. Thousands and thousands of letters and telegrams urging enactment of these bills were poured in upon members of the Legislature. A section of the press vigorously urged their adoption but the large majority of the assemblymen refused to become interested.

Skilful and telling opposition to the bills was presented by high officials of the medical and dental

schools of the state; the Animal Husbandry Division of the State College of Agriculture; the State Association of Veterinarians, and commercial laboratories.

CULTISTS

Chiropractors and Naturopaths were exceedingly active in seeking to secure favorable action by the Legislature. Two groups of Naturopaths were on hand with well financed and active lobbies. One group sponsored the perennial bill to set up a new Board of Naturopathic Examiners and grant licenses to all members of their association. Hearings on this bill dragged out for weeks in the Senate Committee on Public Health and Safety; the bill was amended numerous times, but still it failed to receive committee approval.

Another group sponsored Assembly Bill 717 to require the State Board of Medical Examiners to issue licenses to Naturopaths upon certification by an examining committee of Naturopaths. This bill too was frequently amended. It was made the subject of study by a sub-committee of the Assembly Committee on Public Health, and finally in the closing days of the session it came out to the Assembly floor "without recommendation." It was finally dropped.

Both of these groups served notice that they would be back again in 1949.

Chiropractors sponsored an amendment to their initiative to increase the number of hours of study required of applicants for license. This will be voted upon at the next general election. They unsuccessfully opposed several bills which tightened up the Medical Practice Act. Particularly did they oppose a Board of Medical Examiners bill to limit the use of the word "physician."

COUNTY HOSPITALS

For the eighth consecutive session of the Legislature a bill was introduced to open up county hospitals to all residents of the county. Its sponsor this year was Assemblyman Lowrey of Yolo County. It was refused committee approval and an effort to withdraw it from committee was defeated on the Assembly floor.

COMPENSATION-DISABILITY INSURANCE

No changes were made in the medical phases of the Compensation Act. Optometrists sought recognition under the act, but the Senate drastically amended their bill to provide that they cannot advertise or hold themselves out as "physicians."

The California Medical Association sponsored Senate Bill 1110 to clarify the position of physicians in certificates for sickness disability indemnity. Dentists and chiropodists will be permitted to certify under the act, within the scope of their practice, but optometrists were specifically excluded.

HOSPITALS

The Legislature approved an administration sponsored bill to permit matching of state funds with federal and local funds for hospital construction. Due to restrictions in the state constitution, this money can be applied only to public hospitals or hospitals constructed by hospital districts, unless the voters amend the constitution to permit non-profit hospitals to participate. Such a constitutional amendment was approved by the Assembly but was killed in Senate committee.

Senate Bill 510 sponsored by the C.M.A. to prohibit the employment of physicians by hospitals organized under the Hospital District Act in such manner as to result in profit to the hospitals, was passed and approved by the Governor.

An attempt to establish minimum standards for hospitals organized under the Hospital District Act was lost when furious opposition was presented by osteopaths. Two plane loads of osteopaths flew to Sacramento to pack the committee room. Conversely, a bill sponsored by osteopaths to require district hospitals to admit them to practice in such hospitals was defeated in Assembly committee.

Hospitals will be permitted to employ residents pending their examination for California licensure, and teaching schools will be permitted to exchange teachers without California licenses, under the terms of Assembly Bill 2428, passed and approved by the Governor.

Early in the session an emergency act was passed extending until January 1, 1948, the wartime exemptions under the Nursing Practice Act. Assembly Bill 2416, passed and approved by the Governor, makes some extensions in the reciprocity features of the Nursing Practice Act.

MEDICAL EXAMINERS

Senator Fred H. Kraft of San Diego was the author of a series of 15 bills sponsored by the Board of Medical Examiners and designed to strengthen the authority of the Board and to correct inequities. In the main these were passed by the Legislature, although the sponsors dropped some of them because of technicalities. Two of these bills of particular general interest are SB 1061 to prohibit the use of the title "physician" unless the user is licensed as a physician and surgeon, and SB 1064 to restrict the power of the courts to reverse the findings of the Board in qualifying medical schools for admission of graduates to examination or in rejecting applicants for examination. The former bill was passed by the Legislature and at this writing (July 5) is awaiting action by the Governor. The latter bill passed and has been approved by the Governor.

MISCELLANEOUS

A large number of bills covering miscellaneous topics of interest to members of the Medical profession were in the legislative hopper. Two bills to permit individuals to will all or parts of their bodies (particularly cornea for transplantation) passed and were signed into law. Assembly Bill 487 to prohibit rebates in medical practice met heavy opposition in committee and failed to receive approval.

Senate Bill 1257, commonly known as "the blood

bank bill," was approved by the Senate Committee on Public Health and Safety but was killed by the Senate Finance Committee.

An administration sponsored bill to extend state aid to local health departments was passed and is awaiting action by the Governor. The bill contains amendments suggested by the C.M.A.

In the closing hours of the session the Senate Committee on Governmental Efficiency tabled Assembly Bill 950, sponsored by the C.M.A., for the purpose of permitting employers to sign up for voluntary medical care programs unless employees rejected such plans. The bill had previously passed the Assembly. Both the A.F.L. and the C.I.O. bitterly opposed it.

Just as the gavel fell in the Assembly to signify that no further Assembly Bills could be introduced, Assemblyman Elliott of Los Angeles introduced a compulsory health insurance bill, modeled after the Olson-sponsored measure of 1937. It failed to receive any attention in the Assembly.

The Governor has until July 25 to sign or pocket-veto all bills passed in the final ten days of the session. Unless otherwise provided, all the new laws go into effect September 19.

Credit for the success of the legislative program goes to key-men in all districts of the state who responded to requests from the Sacramento office; to physicians who gave of their time to journey to the Capitol and appear as witnesses at committee hearings; to Sacramento physicians who made valuable contacts with legislators and to the masterful direction of the over-all picture by Dr. Dwight H. Murray, chairman of the C.M.A. Committee on Public Policy and Legislation.

Legislators have now returned to their homes, after a tiring session. A great many of these members gave powerful aid to the program of good public health legislation. It is urgently suggested that each member of the medical profession make it a special order of business to see his legislator and express appreciation for whatever support was given to this program.

C.M.A.'s Radio Program Becomes 30-Minute Sunday Afternoon Show on ABC

"California Caravan," the California Medical Association radio program inaugurated a year ago by the public relations department under authorization of the Council, has celebrated its first birthday anniversary by becoming a 30-minute Sunday afternoon show on the American Broadcasting Company's California network.

The C.M.A. show, dramatizing celebrated and colorful chapters in California history and utilizing its commercials to advance the cause of voluntary health insurance, is now broadcast every Sunday afternoon from 1:30 to 2 o'clock on the powerful ABC network.

In deciding upon the change from a 15-minute to a 30-minute program and from Friday evening to Sunday afternoon, the Council of C.M.A. weighed several important factors. One was that Sunday programs on the air command greater audiences than those on other days. Also it was recognized that the additional time will permit "California Caravan" to develop dramatic and historic themes in a manner not possible under the previous time limitation.

Of importance, too, was the consideration that the longer program will permit fuller presentation of commercials on the benefits of voluntary pre-paid health insurance, as opposed to compulsory systems.

Perhaps the major influence was a strong letter of commendation for "California Caravan" from the Los Angeles Tenth District unit of the California Congress of Parents and Teachers, comprising 178,000 members, coupled with an appeal that the program be broadcast earlier to enlarge the "family audience."

Said the P.T.A.: "California Caravan is one of the best programs on the air. We might add that parents are always looking for programs for family listening and would appreciate an earlier broadcast

Evidence that C.M.A.'s weekly radio program, "California Caravan," is building good will among the people of California not only as a dramatic exponent of the principle of voluntary health insurance, but as a worthwhile contribution to family-type radio entertainment is contained in a letter written June 2 by Mrs. Clara S. Logan, radio chairman, Los Angeles Tenth District, California Congress of Parents and Teachers.

"It is our opinion that 'California Caravan' is one of the best programs on the air," Mrs. Logan's letter says. "It is especially to be recommended because it is an excellent example of how an educational program can be an entertaining one. Parents are always looking for programs for family listening, and 'California Caravan' is one the entire family can enjoy together."

The Los Angeles Tenth District P.T.A. has more than 178,000 members, and Mrs. Logan's letter further reveals that the entire membership is being advised to tune in on "California Caravan," through the medium of the District's recently published radio guide.

This guide, besides going into the homes of P.T.A. members, is being placed in all the 10,000 classrooms of the Los Angeles city school system.

for this program which is one the entire family could enjoy together."

The question "Does it pay to advertise?" also entered into the Council's consideration of whether to expand the radio program. When the radio-newspaper advertising campaign of C.M.A. was inaugurated a year ago, California Physicians' Service had an insured membership of 225,000. Today its membership is well over 500,000.

Not only CPS, but other progressive voluntary health insurance systems, apparently have benefited substantially from the C.M.A.'s campaign to make the people of California "health insurance conscious." The number of people insured in all the various health insurance systems in California increased more than 1,000,000 in 12 months.

California stations which will broadcast "California Caravan" on the new Sunday time schedule, 1:30 to 2 p.m., are:

Los Angeles	KECA	Sacramento	KFBK
San Francisco	KGO	Stockton	KWG
Watsonville	KHUB	Bakersfield	KPMC
Santa Barbara	KTMS	Eureka	KHUM
San Diego	KFMB	Riverside	KPRO
Santa Maria	KCOY	Brawley	KROP
Fresno-Visalia	KTKC	Indio	KREO

CANCER NEWS:

The Cancer Commission of the California Medical Association is continuing its program of professional education by means of published articles in CALIFORNIA MEDICINE, periodic refresher courses for physicians, and special lectures before component county medical society groups. County medical society secretaries desirous of securing speakers on cancer for future programs should communicate with Dr. David A. Wood, Cancer Commission, 450 Sutter Street, San Francisco, at the earliest possible date.

The Cancer Commission also functions as a portion of the Board of Directors of the California Division of the American Cancer Society. That Society is advancing the work of popular education and assistance in cancer with the cooperation of the Cancer Commission.

The program of the Society and the Commission is essentially as follows: *to make maximum use of methods already available for the prevention, diagnosis and treatment of cancer, and to continue research* for improvement in those fields. At the present time the program includes the gradual development of Information Centers, Detection Centers and Consultative Tumor Boards.

Information Centers are units whence the public may be directed to physicians for examination and treatment. In larger counties they are combined with units for home and hospital service to needy cancer patients, and other service projects.

There is considerable demand for so-called Detection Centers. Detection centers are defined as agencies, usually connected with hospitals, to which apparently *healthy* persons may go for periodic physical examinations directed to the detection of accessible cancer. The practical operation of detection centers is a complex and relatively expensive undertaking. It is estimated that at least 400 apparently healthy adults over the age of 40 must be examined for every accessible cancer detected. The cost per examination approximates $20. With several million persons in this state over the age of 40, it is quite evident that periodic physical examinations of all apparently healthy adults would be a herculean task.

A more rapid solution of the problem is undoubtedly to attempt to "make every physician's office a detection center." This is the policy of your cancer organizations.

There is now available in most general hospitals in this state a Consultative Tumor Board.

The minimum standards for Approved Detection Centers and Approved Consultative Tumor Boards are reprinted below for your information.

It is hoped that within a relatively short number of years there will be available within a reasonable distance in every part of the state (depending upon population density and geographic considerations) physicians interested in and competent to diagnose and treat cancers—notably the triad of a pathologist, a radiologist and a surgeon. By such means there will be readily available to the public the trained personnel required for the diagnosis and treatment of this disease.

The following standards are available in reprint form for members desiring such. Copies have already been sent to all Centers and Tumor Boards, and the staff members contemplating the creation of such, to the State Department of Public Health and to similar agencies.

* * *

Minimum Standards for Cancer Detection Centers*

The Council of the California Medical Association is authorized to approve such cancer detection centers as are recommended to it by the Cancer Commission as having fulfilled the minimum standards.

Policy of California Medical Association

The California Medical Association recognizes and asserts the importance of periodic physical examinations in all persons over forty years of age and in all women after pregnancy in order to detect early chronic diseases with special emphasis on the early detection of cancer.

Therefore, the California Medical Association strongly urges its members to adopt a regular pro-

* Members desiring to obtain further details regarding organization and experiences in existing Detection Centers may read:

1. The Service Handbook of American Cancer Society, 1947 (pp. 5, 16-22 and 30 and 34); obtainable from the state office, American Cancer Society, 405 Montgomery Street, San Francisco.

2. The Health Maintenance booklet published by the Donner Foundation, Philadelphia, 1947.

gram of complete periodic health examinations of all patients after middle life in their private practice. The California Medical Association also strongly urges the public to seek regular periodic complete physical examinations by their family physician.

Further, the California Medical Association approves the establishment of "cancer detection centers" by component county societies for the periodic examination of presumably well adults provided such centers meet the minimum standards adopted by the California Medical Association.

California Medical Association Minimum Standards for Cancer Detection Centers†

Purpose: The purpose of the "cancer detection center" shall be to make periodic physical examinations of presumably well persons to discover early chronic disease with special emphasis on the early recognition of cancer or lesions that may lead to cancer.

Definition (of the American Cancer Society and Approved by the A.M.A.): "The cancer detection, cancer prevention or well-person clinic is designed to detect abnormalities not producing symptoms sufficient to send the patient to the doctor. These clinics do not diagnose or treat diseases."

Preamble: The cancer detection center has proved to be a useful means of discovering early cancer or lesions that may lead to cancer. The center may be a valuable public health measure, but in order to protect the public both physically and mentally, it is essential that the examinations in these clinics be conducted with judgment and accuracy. The cancer detection center properly conducted can be the means of saving the lives of cancer patients, but if not properly conducted, it can be a source of great danger. If the examinations in the center are not thoroughly and efficiently made early cancer may be overlooked and the patient dismissed with a sense of false security which will delay further adequate treatment. Also, failure of the clinic to evaluate supicious lesions may develop an unjustified and ineradicable cancer phobia.

In order to assure the public of the best type of periodic examination and to protect the public from incomplete methods and unfounded fear, the C.M.A. has adopted the following program of "minimum standards" for "cancer detection centers" in California.

1. The cancer detection center shall have the continued approval and support of the county medical society. The clinicians must be members of that society.

2. The center must be conducted in the out-patient department of a Class A medical school or an approved hospital. If located away from the institution it must be operated as an integral out-patient department of that institution.

3. Where there is no approved hospital or medical school in the community the cancer detection center will be operated by the county medical society and all of the activities will be under the immediate supervision and control of the society. The center shall be conducted in a local hospital unless special approval is granted by the Cancer Commission after careful investigation.

4. The center shall be supervised by a physician who has had training and experience in the diagnosis and treatment of cancer.

5. The center shall have proper housing and adequate facilities and supplies to conduct complete physical examinations. The clinical laboratory and x-ray departments shall be easily accessible to it.

6. A sufficient number of clinicians shall be available to conduct the center at regular intervals and to provide for complete physical examination of every patient accepted by the center.

7. Adequate records shall be kept of the history, physical findings and recommendations and of the disposition of the patients. Sufficient personnel shall be available to provide for necessary nursing, stenographic and record services.

8. The examination shall include:
   - (a) History
   - (b) Routine blood count, urinalysis and serology
   - (c) X-ray film of the chest (mass survey)
   - (d) Nose and throat examination, including lips and interoral
   - (e) Examination of the breasts
   - (f) Physical examination of the chest, abdomen and extremities (including skin)
   - (g) Examination of lymph nodes: neck, axillae and groin
   - (h) Pelvic examination
   - (i) Rectal examination
   - (j) Papanicolaou vaginal smear (where feasible).

9. Examinees that present suspicious history or abnormal physical findings shall be referred to their family physician for diagnosis and treatment. If there is no family physician, the patient shall be referred to a physician or clinic as directed by the policy of the county medical society.

10. A summary of the pertinent facts and recommendations of the center shall be sent to the physician or clinic to whom the patient is referred.

11. One month after such reference to physician the case shall be followed up by letter or social service visit and a complete report of the diagnosis and treatment shall be obtained.

12. Only presumably well adult patients will be accepted for examination. No patient under treatment for cancer will be accepted without permission of the attending physician.

13. Examinees shall pay a registration fee of $2.00 for each appointment, collected in the name of the institution conducting the center.

14. All publicity concerning the center must have the approval of the county medical society.

† Cancer Detection, Cancer Prevention or Well-Person Clinics, Health Maintenance and Cancer Prevention Clinics, and Examination Centers are all terms applied to such clinics. In California "detection clinics" shall officially be known as "Cancer Detection Centers."

15. Regularly scheduled periodic meetings will be held by the staff to study, review and follow up the cases seen in the clinic. An annual report of the work of the center will be sent to the Cancer Commission.

Minimum Standards for Consultative Tumor Boards

The Minimum Standards for Consultative Tumor Boards are presented by the Cancer Commission as a guide for the formation of new boards in California. These Standards will be the basis of approval and recommendations for all Tumor Boards that apply to the California Division of the American Cancer Society for financial support.

I. Personnel

Each Tumor Board must meet the following minimum requirements:

A. *Officers*
1. Chairman—M.D.
2. Professional secretary—M.D.
3. Lay secretary.

B. *Regular members* (all must be certified)
1. Pathologist (pathologic anatomy)
2. Radiologist
3. Surgeon
4. Internist
5. Gynecologist.

C. *Consultative members* (preferably certified but not mandatory)
1. Otolaryngologist
2. Orthopedist
3. Urologist
4. Thoracic specialist
5. Dermatologist
6. Ophthalmologist
7. Plastic surgeon.

D. *Approval*

In those instances where one or more members of the Regular Tumor Board are not certified or where the standard number of specialists is not available, approval may be granted after consideration by the Cancer Commission.

II. Meetings and Procedure

1. Each Board shall have regularly scheduled periodic meetings and shall have a minimum attendance of 80 per cent of the Regular members. Consultative members shall maintain 80 per cent attendance when notified of presentation of cases in their specialties.
2. The professional members of each Board shall serve without pay.
3. Each Board shall see all patients who present themselves regardless of the financial status of of the patients.
4. All technical and/or therapeutic procedures instituted under the direction of the Board shall be limited to indigent or needy patients. Such procedures for private patients shall be arranged for according to accepted private practice standards.
5. Boards must keep clinical records, cross indices and follow-up files on each case, and these files shall be in accordance with the standard set up by the State Cancer Commission.
6. All data compiled and recorded by the Board shall be open to inspection by the Cancer Commission or its representative.
7. Cases shall be presented before any therapy has been instituted when feasible.
8. All licensed physicians shall be welcomed and encouraged to attend the meetings of the Board.
9. All cases of tissue diagnosis of tumors presented at approved Tumor Boards shall be submitted with pertinent data to the central tumor registry of the California Cancer Commission upon the establishment of said registry.
10. The diagnostic nomenclature used by the registry shall be in conformity with that recommended by the California Cancer Commission.

III. Types of Board

A. *County Hospitals*

Tumor Boards established in County Hospitals and receiving financial support from the American Cancer Society shall at all times make their consultative services available to any and all private cases that are referred by a private physician. They shall refer all patients who are not eligible for County care and who are not referred by a private physician to a choice of three members from a panel approved by the County Medical Society.

B. *Private Hospitals*

Tumor Boards in private hospitals are designed primarily for consultation on cases referred by the staff or referred by private physicians. Patients referred by private physicians will be sent back to the referring physician with a written record of the findings of the Board and recommendations for management. In exceptional cases Tumor Boards may accept patients for consultative service who are not referred by a physician. In such instances, after review by the Consultative Board, the patient will be given the names of three physicians from a panel designated by the local County Medical Society. A follow-up check will be kept on each patient seen by the Board regardless of the disposition of the case.

IV. General Plan

Under ideal circumstances, all new tumor cases should come before the Tumor Board on first admission to the institution (either as inpatient or outpatient). However, in large institutions this would tend to overburden the Board with non-problematical cases, and in all institutions might be productive of

delay. Hence, a working plan for the average institution might be as follows:

A. Cases in which surgery is the accepted mode of treatment and which are in prompt need of such (e.g. annular tumor of descending colon) do not need routine presentation in person. A filled-out "approved case record for Consultative Tumor Boards" will be sufficient. (Until such time as case record forms approved by the Cancer Commission of the C.M.A. are available, the American College of Surgeons form may be used.)

B. Cases in which radiotherapy is the accepted mode of treatment (e.g. small cutaneous angiomata) could be handled similarly. The correctly filled out case record form would be furnished for notification purposes.

C. Cases in which operation or irradiation *might* be but are not unquestionably indicated (either alone or in combination), (e.g. a stage II carcinoma of the breast) should be shown.

D. The actual therapeutic results, immediate and remote, should be carefully analyzed at regular intervals.

Dr. Goin's Statement as Witness On National Public Health Bill

The following is the text of a statement made June 4 in the District of Columbia by Lowell S. Goin, M.D., when he appeared in behalf of the California Medical Association, California Physicians' Service and the American College of Radiology as a witness in the hearings on S. 545, the National Public Health bill, before the Committee on Labor and Public Welfare of the United States Senate.

My name is Lowell S. Goin. I am a physician in active practice in Los Angeles, California. I am past president of the California Medical Association, past president of The American College of Radiology, and I am president of California Physicians' Service which, I am sure you know, is the voluntary health care plan instituted by the medical profession in California. I find myself in general agreement with the purposes set forth in this bill, although I regret to say that I cannot agree in every respect with every particular. I think that there is no doubt that a problem of the distribution of medical care actually exists. It does not exist for the reason commonly alleged by the social reformer, but rather because we live in a complex social-economic milieu, and since medicine has become so vast in the scope of its knowledge, it becomes increasingly difficult to apply this knowledge well for the benefit of sick humanity under our present method of distributing medical care. The present bill, in my opinion, represents the first intelligent attempt that has been made to cope with this problem on the national level.

All discussions of the problem of medical care are confused by a recently developing tendency to use the words "health" and "medical care" as though they were interchangeable words; as though one were a synonym of the other. Nothing is farther from the truth. Medical care is, in fact, only a part of the problem of health and not even the most important part, since health depends almost entirely upon good nutrition, good housing, adequate clothing, adequate rest periods, adequate recreation, sanitation, hygiene, the regulation of patent medicine advertising, the control of the cults, etc. Medical care consists of the care of the sick and injured, while health consists of *not* being sick or injured; and it seems to me that the Federal government, if sincerely interested in health and welfare of the people, might well turn its attention to some of these other problems rather than attacking the minor fraction of the problem called medical care.

I think that it is debatable that the care of the health of the American people is a natural function of the government. All history seems to indicate that the best government is that which governs the least; and the constant intervention in the private lives of citizens by the Federal government is a thing which I view with alarm. I am not even sure that we should take money from the taxpayer, transport it to Washington, and return it to the several states from which it came, since this too represents one more bit of paternal intervention by the centralized government. Perhaps I am wrong in this opinion, but I am a sturdy believer in the rights of the sovereign states and I dislike to see intervention by the Federal government which is not of absolute necessity. I am certain that the policy expressed in Section 2 of the pending bill, namely that it is the policy to make available medical, hospital, dental and public health services to every individual regardless of race or *economic status* is not a sound policy, and that people who are economically able to care for themselves should by all means do it, since it is thus that our individuality is preserved.

Nevertheless the general intentions of this bill are most commendable, and I am pleased to be able to endorse them. There is no doubt that at present, health and medical functions are widely scattered through the various departments and agencies of the Federal government and that it is an excellent thing to collect these agencies into a single national agency as the bill proposes to do. Obviously the Pure Food and Drug Act has to do with the health of the people and I feel that there is no doubt that it should be coordinated in an agency such as is proposed in the current bill. If the bill were to have no other effect than the coordination of these now widely scattered agencies the bill would be a good bill for that reason alone.

I am in grave doubt as to Section 203 of Title 2, which authorizes the Surgeon General to expend $10,000,00 each year for developing more effective measures for the prevention and control of cancer and to assist the states and political subdivisions of the states to establish and maintain adequate meas-

ures for the prevention and control of cancer including the provision for appropriate facilities for diagnosis, etc. I think that an appropriation of money for the general purpose of research into the nature and cause of cancer is a most commendable thing and, indeed, I suspect that a much larger sum should be made available. I see no more reason, however, to provide $10,000,000 for the diagnosis and control of cancer than to provide a similar sum for the control and diagnosis of gastric ulcer, arthritis, or any other disease. As a matter of fact more people actually die of heart disease than die of cancer, and perhaps it would be even more appropriate to appropriate an even larger sum of money for the control of heart disease. Since there is only one other section of the bill of which I feel critical perhaps I had best deal with it at once.

In Section 712 there appear the words "no plan or modification shall be disapproved because the director disapproves of the methods proposed if the program is designed and calculated by July 1, 1952, to provide hospital services, surgical services, medical services and periodic physical examinations as required by Section 712, Paragraph 'A'," and to this is added: "it is intended that the states shall devise in each case the methods by which this end is attained." These words appear to me to permit a state to institute a system of compulsory sickness insurance, the Federal government giving a grant-in-aid to such state for the purpose of administering such a compulsory sickness insurance program. It is true that this section seems to be somewhat in conflict with Paragraph 4 of Subsection A, of the same section, in which there occur the words "such program may at the option of the state provide medical care services in one or more of the following ways: in institutions, in the home or in physicians' offices; such program may also provide for the furnishing of such services to such families and such individuals by means of payments in the nature of premiums or partial premiums, or reimbursement of expenses, or otherwise by the state to any voluntary health, medical or hospital insurance fund or other fund not operated for profit, etc." I am unaware as to whether the conflict is unintentional or whether it is actually the intent of the writers of this bill to permit a state having a compulsory sickness insurance program to secure a grant-in-aid for the furtherance of that program. If the latter is the intent, then I must oppose this section of the bill as I have been, and am, strongly opposed to any such system of administering medical care.

I am greatly interested in voluntary health care plans, and I consider the development of such plans to be entirely in accord with our American tradition in which people care for themselves, rather than become the dependent wards of the state. It is my sincere belief that voluntary health insurance, if left to develop untrammeled by any compulsory sickness insurance plan, and in particular if aided by the states so that the medical indigent may be included in such plan, will develop and administer much better medical care than the people will ever receive under any sort of compulsory insurance plan. It is interesting to note that to the best of my knowledge and belief no compulsory sickness insurance plan thus far presented has made the slightest effort to care for these medically indigent people, leaving them exactly where they are now, a burden upon the charity of the medical profession. Voluntary health insurance would afford an excellent means for the state to render medical care to persons totally or partly unable to pay for it, by the simple means of subsidization of these people by payment of their premiums, or part of their premiums, to existing voluntary health care plans. Incidentally I note that the bill refers frequently to voluntary non-profit plans. Although I have no interest in any except a non-profit plan, I really see no reason why commercial insurance carriers who are prepared to offer adequate health care plans should not have their premiums paid likewise, since the objective of such legislation is not the establishment of any particular method of caring for the sick and injured, but simply of insuring that care is available to them. Certainly in our American system, the making of a profit is no sin, and I repeat that I see no reason why commercial insurance carriers could not easily be included in the proposed program.

As to voluntary health care plans the social reformer argues that there are many objections to them; that there are not a sufficient number of people covered; that people will not provide themselves with voluntary coverage; that the existing plans do not offer complete coverage; that preventive medicine is not sufficiently emphasized; and that protection of the citizens' health is a natural function of the government. I have already spoken of the theory that the protection of the citizens' health is a natural function of government stating that I thought it a debatable doctrine. Let us now consider the additional objections.

It is true that not nearly as many persons are covered as would be covered by a national compulsory plan. But does this mean that people should be compelled by law to do something for their own protection—something that they seem thus far not to be persuaded is essential? As experience develops, as an increasingly large number of subscribers are protected, will not these (if they are satisfied with their coverage) urge their friends and relatives to buy voluntary insurance protection and, if the plan is bad, will it not fall of its own weight? Why, then, must we suddenly impose a new, untried, and highly experimental plan upon the American people? If voluntary insurance proves inadequate or unsatisfactory it may be terminated at any time by those who are insured, since, if they become dissatisfied, they will simply cease paying for unsatisfactory service. All experience, however, indicates that a compulsory plan, once enacted into law, is never repealed, but is simply compounded by amendments, executive orders, and decrees. More than thirty million people are now covered by one type or another of voluntary health insurance, and it seems reason-

able to assume their satisfaction with it, since they continue to pay their premiums.

To the argument that not enough people will protect themselves without compulsion, there are two answers. Seventy-one million of our people have protected themselves with life insurance which they bought and continue to pay for of their own free will, simply because they have been persuaded as to the necessity of so doing. Of course, this vast number of insured was not reached in the first few years of selling insurance, nor should we expect tremendous numbers to enroll themselves in health insurance plans until educational campaigns have had an opportunity to persuade them; and if, after such opportunity has been afforded, people still decline to buy health insurance, will it not indicate their disinclination to budget themselves for medical care, either voluntary or compulsory? And are we not still free men capable of deciding for ourselves, without the intervention of an all-wise government?

Existing voluntary plans do not offer complete coverage, (although some of them approach it rather closely) nor does the currently proposed compulsory plan, in spite of claims to the contrary. Complete coverage is not yet offered because we simply do not know how to do it; nor do those who demand enactment of compulsory insurance. Many voluntary plans offer protection which is complete except for the first two visits to the doctor; a reservation which is necessary to protect the plans from frank imposition, but which could scarcely be held to be a very serious obstacle to obtaining medical care. Little as the compulsory insurance proponents say about it, an identical provision was contained in the last Murray-Wagner-Dingell Bill. Complete coverage will be offered by voluntary plans as soon as the necessary experience has accumulated. Without experience, it cannot be offered, nor can the necessity for experience be by-passed by writing a law.

Preventive medicine is a phrase much beloved by the social reformer, who seems to have a child-like faith that a visit to the panel practitioner will prevent disease. The hard fact is that medicine has not yet attained to the goals wished for, and that most talk about preventive medicine is wishful thinking. How shall we prevent heart disease (except that due to rheumatic fever)? What examination today makes one aware of the coronary disease impending? How do we prevent cancer of the stomach and intestinal tract? The plain hard answer is that there is no such examination, and that we do not know how to prevent cancer or heart disease, and yet these are the two greatest killers that we know. Moreover, it will be well to know how compulsory health insurance proposes to accomplish miracles in preventive medicine. There were two references to the matter in the lately pending legislation: One authorized grants-in-aid to research institutions, and the other directed that the administration of the law shall be such as to prevent accident, disease and premature death! A consummation devoutly to be wished for, but a typical example of the type of thinking that leads to compulsory health insurance—that is, write it down in a law and it's accomplished.

What have the voluntary plans to offer? Service varying from almost complete (that is, two visits deductible) to that covering only catastrophic illnesses. Not every one has need of the same amount of service; the voluntary plans afford to each the chance to select that which he requires. Sixty-four voluntary plans are now in effect, not including the large amount of indemnity sickness and accident insurance which is written annually by the commercial companies. These plans offer their insured the opportunity to select the doctor of their choice, to go to the hospital which is preferred and, in general, to receive medical care of like quality and under the conditions to which they are accustomed. No administrative officer intervenes; no permits are needed; the relationship between doctor and patient remains the personal and confidential one of the past. No panels are formed; no one's permission is needed to choose a doctor or to change doctors if the patient is dissatisfied. That compulsory sickness insurance can or will permit these freedoms is simply not true.

That voluntary plans can do so is shown by the experience of California Physicians' Service. It is difficult to conceive that its astonishing growth, from 4,000 beneficiary members in 1940 to about 500,000 in 1947, could have occurred unless the members were well satisfied with the services they have received. That they are, in fact, well pleased is shown by the very small cancellation rate, averaging about 2.5 per cent. The growth rate of California Physicians' Service is rapid, and is gaining velocity constantly.

With the cooperation of the California State Grange the Service has enrolled 13,000 farmers of California representing about 60 per cent of the Grange membership, giving them service for surgical operations, specifically including fractures and dislocations, and including hospitalization. After one year's experience, we are reexamining the contracts with a view to including medical care (as distinguished from surgical care) while the member is hospitalized, and we hope eventually to offer full coverage to these farmers and their families. The success of this program may be estimated from the following quotations from a letter signed by Mr. George Shelmeyer, Master of the California State Grange: "As you know, this program has attracted national attention. It is our belief the Grange C.P.S. cooperative program can be built into one of the largest and most satisfactory voluntary health services in the United States."

"Through this program we have been able to make available to our membership surgical care and hospitalization, at prices which they can afford to pay. We consider this plan one of the most sound and constructive movements in voluntary health programs."

This represents our first attempt to give service to individuals who are not employees of a common employer, and who cannot be subjected to payroll

deduction. It is earnestly hoped that this effort will lead to the development of experience sufficient to warrant the coverage of other non-employed persons.

Recently the Service has enrolled 16,000 employees of Standard Oil Company of California, employees scattered over the entire state; and in increasing numbers employers are hastening to secure this health care service for their employees.

With our present experience we are able to supply surgical care, including hospitalization and specifically including fractures and dislocations, at the following rates: male employees $2.00 per month, female employees $2.65 per month, employee and one family member $4.90 per month, employee and two or more family members (including any number of dependents) $6.80 per month.

Practically complete coverage representing all medical care except the first two visits to the doctor, and including hospitalization, is supplied at the following rates: male employee $3.15; female employee $3.80 monthly, employee and one family member $6.05, employee and two or more family members (including any number of dependents) $7.95 monthly.

It will be noted that these latter contracts are practically complete health care services. It has been found necessary to require the beneficiary to pay for the first two visits to the doctor to discourage the perfectly human tendency to abuse the plan. If the first visit or the first two visits to the doctor lead to surgery these visits also are covered.

If it be argued that these subscription fees are high, let me point out that there is thus far no one who knows what these services would cost under compulsory sickness insurance and to remind the committee that the New Zealand compulsory sickness insurance plan operates with a 7.5 per cent pay roll deduction; that it is further subsidized with money from the general tax fund and that its cost now equals 2 per cent of the national income of New Zealand. I may also remark that in the Senate Interim Committee Hearings in the California Senate, testimony was given by proponents for compulsory sickness insurance that a payroll deduction of between 6.75 and 7.15 per cent would be necessary to finance a full coverage program.

I say again that voluntary health insurance will give to the American people more medical care and much better medical care than can ever be furnished by a politically managed compulsory plan. Particularly is this true if the states are permitted, or assisted, in the subsidization of this care for those who are actually unable to afford it. That the growth of voluntary health care plans has been slow is to be expected. Evolution is a slower and less dramatic process than revolution but the revolutionary product is likely to be the sounder one. Voluntary health care plans are being developed and as rapidly as may be. They have been developed on sound actuarial bases by men who know that the complex and vexing problems of medical care are not to be solved by writing words and making them into laws. With the few reservations previously mentioned I thoroughly commend this bill and trust that it will be enacted into law.

Minutes of Council Meetings

TENTATIVE DRAFTS OF THE 340TH, 341ST, 342ND, 343RD, 344TH AND 345TH MEETINGS OF THE COUNCIL, CALIFORNIA MEDICAL ASSOCIATION

340th Meeting

The meeting was called to order by Chairman Bruck at 1:15 p.m., April 29, 1947, the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green, Cherry, MacLean, Moody, Thompson and Regan, Editor Wilbur and Secretary Garland.

Absent: Councilors Johnston and Crane.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Assistant Executive Secretary Wheeler, Dr. E. L. Remmen, president of the Los Angeles County Medical Association, county society executive secretaries Stanley K. Cochems of Los Angeles, Rollen Waterson of Alameda, Frank J. Kihm of San Francisco, Kenneth Young of San Diego, and Joseph Donovan of Santa Clara, and Mr. William Tobitt, public relations director of the Alameda County Medical Association. Mr. Clem Whitaker, public relations counsel, also present by invitation.

2. *Minutes:*

Minutes of the 339th Council meeting were approved.

3. *Membership:*

(a) A report of membership as of April 25, 1947, was received.

(b) Upon motion duly made and seconded, it was voted to reinstate four members whose 1946 dues had been received since the Council meeting of March 15, 1947.

(c) Upon motion duly made and seconded, it was voted to reinstate 1,523 members whose 1947 dues had been paid subsequent to April 1, 1947.

(d) Upon motion duly made and seconded, it was voted to elect to retired membership the following: Robert Thomas Legge and Frank D. Walsh, Alameda County; William H. Eaton and Liva Charles McLain, Kern County; Harold D. Cornell, San Diego County; Walter H. Brown, Harold Brunn, Henry D. Brusco and Lionel S. Schmitt, San Francisco.

(e) Upon motion duly made and seconded, it was voted to elect to associate membership the following: Elmina N. Cameron, Walter W. Ellwood, Alameda County; W. F. Stein, Fresno County; Roy O. Gilbert, Los Angeles County; C. W. Hartsough and Saul Ruby, San Diego County; Elizabeth Tock and Robert Dyar, San Joaquin County.

(f) Upon motion duly made and seconded, it was voted to elect to life membership the following: E. J. Couey, Fresno County, and N. D. Morrison, San Mateo County.

4. *Financial:*

(a) A report of bank balances as of April 25, 1947, was received. Also received were reports of receipts and expenditures for the period ended April 25, 1947, and a balance sheet as of April 25, 1947.

(b) Upon motion duly made and seconded, it was voted to transfer to the Trustees of the California Medical Association $206,000 par value U. S. Treasury 2½ per cent bonds of 1972-1967 purchased as authorized at the 399th Council meeting.

(c) Upon motion duly made and seconded it was voted to purchase an additional $200,000 par value U. S. Treasury bonds and to transfer ownership of such bonds to the Trustees of the California Medical Association.

(d) The monthly allocation of $5,000 to California Physicians' Service to cover additional expenses to C.P.S. because of CMA public relations activities was discussed; the executive secretary stated that he had talked with Mr. William Bowman, executive director of C.P.S., in this regard and it had been agreed that discontinuance of this allocation would be recommended following the close of the Association's fiscal year on June 30, 1947. It was decided to hold this item open for further consideration when C.P.S. representatives would be present.

5. *Report of the Council:*

The report of the Council, as published in the March, 1947, issue of CALIFORNIA MEDICINE, was discussed. Upon motion duly made and seconded, it was voted to approve the Council report as published, subject to additions which might be voted prior to the meeting of the House of Delegates.

Upon motion by McClendon, seconded by Anderson, with amendments made and approved by the mover and seconder, it was voted without dissent that the Council go on record as disapproving a constitutional amendment offered in the 1946 House of Delegates, the effect of which would be to increase the size of the Council and that the Council chairman appoint a committee to draft a resolution to that effect to be presented to the House of Delegates as an addendum to the report of the Council.

Legal Counsel presented a proposed amendment to the Constitution, to amend Article IV, Section 1(e) of the Constitution, covering eligibility for election to Life Membership. Upon motion duly made and seconded, it was voted that the proposed constitutional amendment be approved and placed before the House of Delegates as an addendum to the Council report.

6. *Public Relations:*

Mr. Whitaker reported on the progress of the public relations campaign, stating that Voluntary Health Insurance Weeks had been staged in 34 counties to date and would be concluded in another five counties by June 30, 1947. He recommended that such campaigns be carried on in the other 19 counties in the last half of 1947.

Mr. Whitaker made the following recommendations:

(1) That more thought be devoted to curing the causes of the demand for compulsory health insurance, through the establishment of a professional relations department within the C.M.A.

(2) That courses in public relations be established in the medical schools of California by the C.M.A.

(3) That the C.M.A. authorize and finance research to determine if California Physicians' Service and commercial insurance companies can insure against catastrophic illness or injury and, if so, on what terms.

In response to a question, Mr. Whitaker stated that a 30-minute radio program on Sunday afternoons would cost about $1,500 weekly as compared with the present cost of about $1,260 weekly for a 15-minute program on Friday evenings. Doctor Cline suggested that an additional $6,000 be added to Mr. Whitaker's budget to cover the cost of such a change in the last half of calendar 1947.

Mr. Whitaker then presented a proposed budget to cover the activities of his organization on behalf of the Association for the fiscal year to start July 1, 1947. For the first half of this period, the final six months of calendar 1947, he proposed a budget to include the completion of Voluntary Health Insurance Weeks, the continuation of the radio program and the continuation of field forces now engaged. For the first six months of 1948 he recommended the elimination of field forces except for one newspaper contact man, the institution of a modified schedule of newspaper advertising and the continuation of the radio program.

7. *Advisory Planning Committee:*

Through its chairman, John Hunton, the Advisory Planning Committee reported on its meeting of April 29, 1947, at which time discussion was held on the advisability of instituting a professional relations program within the framework of the C.M.A., the program being aimed at determining and correcting those elements in the daily contact between the individual physician and the individual patient from which bad public relations for the entire profession

might arise. The committee suggested that if such corrections could be made, the ultimate public relations of the medical profession might be improved and the demand of the public for a system of compulsory health insurance eliminated.

The committee offered a three-point program, upon which it requested that no action be taken at this meeting but that consideration of the proposal be given by the Council prior to the termination of the 1947 Annual Session. The program is as follows:

(1) That emphasis on the "human relations" in medical practice be started immediately in order to improve physician-patient relationships.

(2) That this work be undertaken directly by the C.M.A. through its Executive Secretary, under the direction of the Executive Committee and in cooperation with the Advisory Planning Committee.

(3) That the Executive Committee be authorized to appropriate sufficient funds to implement this program as it develops.

Upon request by the Council chairman, this proposal was discussed briefly by Messrs. Waterson, Cochems, Donovan, Young and Kihm.

Upon motion duly made and seconded, it was voted to defer consideration of this proposal and of Mr. Whitaker's budget to the April 30 meeting of the Council, at which time these items would be discussed together with the proposed budget for the Association's 1947-1948 fiscal year.

8. *Meeting Place for 1948:*

Upon motion by Anderson, seconded by Cherry, it was unanimously voted that the 1948 Annual Session be held in San Francisco.

9. *Palo Alto Clinic:*

Chairman Bruck read the correspondence between the Association and the Santa Clara County Medical Society and Stanford University resulting from the 399th Council meeting. Upon motion duly made and seconded, it was voted that the Council resolution adopted at the 399th Council meeting be added to the Council report to the House of Delegates.

10. *Committee on Committees:*

The Council chairman was authorized to appoint a committee (consisting of Councilors MacDonald, Henderson and Alesen, Chairman) to recommend members for appointment as members of standing committees.

11. *Tuberculosis and Health Association:*

Upon motion by Shipman, seconded by Henderson, it was voted that the Council chairman appoint a special committee to serve as a liaison between the Association and the California Tuberculosis and Health Association.

12. *Proposed Class of Membership:*

Doctor McClendon suggested that the creation of a new class of membership, to include medical students, internes and residents, be considered by the Council. Upon motion by McClendon, seconded by Kindall, it was voted that a constitutional amendment covering such membership class be prepared for consideration by the Council. The Council chairman appointed Doctors McClendon and Kindall to this committee and suggested that they also study the possibility of a separate organization of students, internes and residents, to be affiliated with the C.M.A.

13. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council should be held at 8 a.m., Wednesday, April 30, 1947, in Conference Room 6 at the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

341st Meeting

The meeting was called to order by Chairman Bruck at 8 a.m., April 30, 1947, in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Crane, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green, Cherry, MacLean, Moody, Thompson and Regan, Secretary Garland and Editor Wilbur.

Absent: Councilor Johnston.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Assistant Executive Secretary Wheeler, county society executive secretaries Waterson of Alameda and Donovan of Santa Clara, Public Relations Consultant Whitaker, Mr. Ed Clancy of California Committee for Voluntary Health Insurance, Doctor Dorothy Allen, secretary of the Alameda County Medical Association, and Doctor C. L. Cooley, secretary, and Mr. William Bowman, executive director, of California Physicians' Service.

2. *Budget for 1947-1948:*

Consideration was given to the proposed budget for the fiscal year to start July 1, 1947. Upon motion duly made and seconded, it was voted that an item of $10,000 for medical defense education be added to the proposed budget.

Upon motion duly made and seconded, it was voted that Mr. Whitaker's proposed budget be approved and that Mr. Whitaker be requested to appear before the House of Delegates to outline his proposed plans.

After consultation with Mr. Bowman, it was moved, seconded and carried that an item of $20,000 for additional assistance to California Physicians' Service be added to the budget.

With the items noted above, it was regularly moved, seconded and carried without dissent that the budget of expenditures for the 1947-1948 fiscal year be approved.

3. *Dues for 1948:*

After discussion, it was regularly moved, seconded and carried unanimously that the Council recommend to the House of Delegates that C.M.A. dues for 1948 be set at $60 and that this figure be used in estimating the Association's revenues for the 1947-1948 budget.

4. *Addendum to Council Report to House of Delegates:*

The committee appointed on April 29 to bring in a proposed resolution covering the constitutional amendment offered in 1946 (Councilors Kneeshaw, chairman, MacDonald, Thompson and Henderson) presented a report setting forth the views of the Council and upon motion duly made and seconded, it was voted that this report be incorporated in the addenda to the Council report to the House of Delegates. In the voting on this motion, Speaker Askey disqualified himself as holding the deciding vote in the House of Delegates in case the Speaker was called upon to vote. Doctor Regan asked that his vote be recorded as opposed to the motion. The other councilors from Los Angeles and adjoining areas spoke at considerable length on behalf of the motion.

5. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council be held on Thursday, May 1, at 8 a.m. in Conference Room 6 of the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

342nd Meeting

The meeting was called to order by Chairman Bruck at 8 a.m., May 1, 1947, in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Crane, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green, Cherry, MacLean, Moody, Thompson and Regan, Secretary Garland and Editor Wilbur.

Absent: Councilor Johnston.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, county society executive secretaries Waterson of Alameda and Donovan of Santa Clara, William Tobitt, public relations director of the Alameda County Medical Association, public relations consultant Whitaker, Doctor Dwight H. Murray, chairman, C.M.A. Committee on Public Policy and Legislation, and Doctor C. L. Cooley, secretary of California Physicians' Service.

2. *Report of Committee on Committees:*

Upon motion duly made and seconded, the recommendations of the Committee to name members of C.M.A. standing committees was accepted and the Council chairman authorized to name the chairmen of the standing committees.

3. *Order of Business of House of Delegates:*

Speaker Askey requested that the order of business of the House of Delegates be set to provide that the Council recommendations on the budget and on the level of dues for 1948, together with Mr. Whitaker's report to the House, be given in executive session prior to consideration of any other business at the second meeting of the House. Upon motion duly made and seconded, it was voted that the order of business of the House of Delegates be so arranged.

4. *Budget and Dues for 1948:*

It was regularly moved, seconded and carried that the members of the Auditing Committee (Councilors Shipman, Kindall and MacLean) appear before Reference Committee Number 3 of the House of Delegates to discuss the 1947-1948 budget and the Council recommendation of dues for 1948.

5. *California Physicians' Service:*

Doctor C. L. Cooley, secretary of California Physicians' Service, reported to the Council that the $20,000 voted on April 30 as a budget item for assistance to C.P.S. would probably not be needed by California Physicians' Service and stated that he would recommend to the Trustees of C.P.S. that funds for these purposes not be requested of the C.M.A. after June 30, 1947. Upon motion duly made and seconded, it was voted to eliminate this item from the proposed budget for 1947-1948.

6. *Public Policy and Legislation:*

Doctor Dwight H. Murray, chairman of the Committee on Public Policy and Legislation, discussed the present legislative situation and the activities of his committee and offered to discuss with any qualified member of the Association any aspects of the committee's work.

7. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council be held at 8 a.m. on Friday, May 2, 1947, in Conference Room 6 of the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

343rd Meeting

The meeting was called to order by Chairman Bruck at 8 a.m., May 2, 1947, in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President McClendon, President-Elect Cline, Speaker Askey, Vice-Speaker Alesen, Councilors Bruck, Shipman, Crane, Henderson, Anderson, Kneeshaw, Kindall, MacDonald, Green,

Cherry, MacLean, Moody, Thompson and Regan, Secretary Garland and Editor Wilbur.

Absent: Councilor Johnston.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Doctor Dwight H. Murray, legislative chairman, county society executive secretaries Waterson of Alameda, Kihm of San Francisco and Donovan of Santa Clara, Doctor Dorothy Allen, secretary of the Alameda County Medical Association, Mr. William Tobitt, public relations director of the Alameda County Medical Association, and Mr. Clem Whitaker, C.M.A. public relations counsel.

2. *Committee on Committees:*

A supplemental report of the committee to name members of the standing committees was accepted.

3. *C.P.S. Fee Schedule Committee:*

A special committee to review the C.P.S. fee schedule was received and, after discussion, it was regularly moved, seconded and carried that this report be referred by the Council to the Reference Committee on New Business and Resolutions of the C.P.S. Administrative Members.

4. *Public Policy and Legislation:*

Mr. Hassard reported on the current legislative status. Relative to Assembly Bill 950, a C.M.A. measure to provide for direct contracts between voluntary health insurance underwriters and employers, he brought out the fact that certain groups of physicians providing prepayment medical care services had requested an amendment so that the bill would cover their activities. Such an amendment was approved by the Council in Assembly Bill 1200 in the 1945 legislative session, the bill from which the present AB 950 is patterned. It was regularly moved, seconded and carried that the Council approve an amendment to AB 950 to cover the request of physician groups that their activities be included in the terms of this measure.

5. *A.M.A. Meeting—June 9-13, 1947:*

Secretary Garland reported on correspondence with the A.M.A. in which the latter organization had requested that the C.M.A. name a county medical society secretary as California representative on a committee to work with the chairman of a meeting of all county society officers scheduled by the A.M.A. to be held in Atlantic City on June 8, 1947. Dr. Garland reported that after consultation with other Association officers it was felt unwise to make such a nomination on the grounds that the scheduling of this meeting had apparently exceeded the authority granted the A.M.A. Board of Trustees by the December, 1946, meeting of the A.M.A. House of Delegates. He requested the A.M.A. chairman to supply information on this point, but received no reply to three inquiries. Dr. D. H. Murray, as a Trustee of the A.M.A., suggested that Dr. Robertson Ward of San Francisco, one of the C.M.A. delegates to the A.M.A. and secretary of the San Francisco County Medical Society, be named for this post.

On motion by Cherry, seconded by Shipman, it was voted (by an 8 to 5 vote) that Dr. Murray's suggestion of Dr. Robertson Ward be approved and that Dr. Ward and Secretary Garland be requested to attend the meeting of county society officers in Atlantic City on June 8, 1947, as observers only.

6. *Illness of Councilor Johnston:*

It was brought out that Councilor Johnston had been unable to attend Council meetings because of illness and it was regularly moved, seconded and unanimously carried that the Secretary send a note to Dr. Johnston expressing the sympathy of the Council in his illness and best wishes for his speedy recovery.

7. *Time and Place of Next Council Meeting:*

It was agreed that the next meeting of the Council should be held at 8 a.m. on Saturday, May 3, in Conference Room 6 of the Biltmore Hotel.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

344th Meeting

The meeting was called to order by President Cline at 8 a.m., in the Biltmore Hotel, Los Angeles.

1. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Vice-Speaker Donald A. Charnock, Councilors Bruck, Shipman, John Ball, Crane, Henderson, Anderson, Kneeshaw, Donald D. Lum, MacDonald, Green, Cherry, MacLean, Wilbur Bailey, and Thompson, Secretary Garland and Editor Wilbur.

Absent: Councilor Regan.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Executive Secretary Kihm of San Francisco County Medical Society and Mr. Clem Whitaker, public relations counsel.

2. *Election of Chairman:*

Upon nomination, duly seconded, Edwin L. Bruck was unanimously elected Chairman of the Council.

3. *Election of Vice-Chairman:*

Upon nomination, duly seconded, Sidney J. Shipman was unanimously elected Vice-Chairman of the Council.

4. *Tuberculosis Association Liaison Committee:*

It was regularly moved, seconded and carried that the Chairman appoint a liaison committee to deal with the California Tuberculosis and Health Association.

5. *Executive Session:*

At this point the Council went into executive session.

It was regularly moved, seconded and carried that Secretary-Treasurer Garland he reappointed for the coming year at no salary.

It was regularly moved, seconded and carried that Editor Wilbur be reappointed for the coming year.

It was regularly moved, seconded and carried that Peart, Baraty & Hassard be reappointed legal counsel for the coming year, with authority given to the Executive Committee to fix the terms of compensation for legal services.

It was regularly moved, seconded and carried that Executive Secretary Hunton be reappointed, with authority granted to the Executive Committee to negotiate a term contract and compensation for a period not to exceed three years.

It was regularly moved, seconded and carried that Mr. Whitaker be appointed a member of the Advisory Planning Committee provided the appointment comes within the scope of the original resolution which established this committee.

6. *Open Session:*

At this point the executive session was declared ended and Doctors Wilbur and Garland and Messrs. Hunton and Hassard returned to the meeting.

7. *Time and Place of Next Meeting:*

It was agreed that the next meeting of the Council be held the afternoon of June 21 and the day of June 22 in San Francisco.

8. *Committee on History:*

Councilor Kneeshaw brought up the request of Dr. George H. Kress, Honorary Historian, for the appropriation of funds to carry on the work of preparing a history of the Association. It was regularly moved, seconded and voted that the Secretary notify Dr. Kress that the Council will be glad to receive and consider any such request for funds for this work.

9. *Catastrophe Insurance:*

Mr. Whitaker suggested that a study be instituted to determine whether or not catastrophe health insurance could be properly underwritten by C.P.S. or by commercial insurance carriers. He suggested that the Bureau of Medical Economics of the American Medical Association might study this question in conjunction with insurance underwriters.

Upon motion duly made and seconded, it was voted that the Secretary be instructed to direct a communication to the American Medical Association requesting that such a study be made, that Mr. Whitaker be directed to consult with California insurance companies along the same line and that the Council request the Board of Trustees of C.P.S. to consider the advisability of research along this line.

10. *Tuberculosis and Health Association:*

Report was made on a meeting in Napa County at which a representative of the California Tuberculosis and Health Association had advocated a system of compulsory health insurance. After discussion, it was regularly moved, seconded and carried that the Secretary be instructed to write to the secretaries of the component county medical societies, pointing out the possibilities of such advocacy by this organization or its representatives and suggesting that they bear such possibility in mind.

11. *Resignation of Council Regan:*

Chairman Bruck read to the Council a letter from Dr. Louis J. Regan, offering his resignation as a member of the Council. It was regularly moved, seconded and carried that this resignation be accepted.

Chairman Bruck read a second letter from Dr. Regan, offering his resignation as a member of the Committee on Medical Defense. It was moved, seconded and carried that this resignation be not accepted.

12. *Vacancy on Council:*

The resignation of Dr. Regan left a vacancy on the Council, which under the terms of Article X, Section 8 of the Constitution, may be filled by appointment by the Council until the next meeting of the House of Delegates. It was agreed that this vacancy should be considered at the next meeting of the Council.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

345th Meeting

The meeting was called to order by Chairman Bruck in the Fairmont Hotel, San Francisco, at 1:30 p.m., Saturday, June 21, 1947.

1. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Vice-Speaker Charnock, Councilors Bruck, Shipman, Ball, Crane, Henderson, Anderson, Kneeshaw, MacDonald, Green, Cherry, MacLean, Bailey and Thompson, Secretary Garland, Editor Wilbur.

Absent: Councilor Lum, because of absence from the state.

Present by invitation were Dr. Dwight H. Murray, legislative chairman; Legal Counsel Howard Hassard, Executive Secretary Hunton, Assistant Executive Secretary Wheeler, Public Relations Counsel Clem Whitaker, and Frank Kihm, executive secretary of the San Francisco County Medical Society.

2. *Minutes:*

On motion duly made and seconded, minutes of the 340th, 341st, 342nd, 343rd and 344th meetings of the Council, held on April 29, April 30, May 1, May 2 and May 3, 1947, were approved.

On motion duly made and seconded, minutes of the 203rd meeting of the Executive Committee, held May 22, 1947, were approved.

3. *Membership:*

(a) A report of membership as of June 20, 1947, showing 8,558 active members in good standing was received.

(b) On motion duly made and seconded, 183 members whose 1947 dues had been received since April 30, 1947, were reinstated to active membership.

(c) On motion made and seconded, retired membership was granted to the following members: Charles Robert Nelson, Alameda County; Dan Hazen Moulton, Butte-Glenn County; John J. Seibel, Fresno County; A. Golitzin, Anna B. Lefler, St. Clair R. Lindsley, James F. Presnell, C. E. Rooney, David Thomson, Herbert W. Wall, Cassius M. C. Walters and William L. Weber, Los Angeles County; Allan Lewis Bramkamp, Benjamin E. Garrison and A. W. Walker, Riverside County; Emmett E. Sappington, San Francisco County; Homer DeWitt Rose, San Joaquin County; and Orta Edward Kuhn, Ventura County.

(d) On motion duly made and seconded, associate membership was granted to the following members: Charles D. Marple, Marin County; Elizabeth Lowenhaupt, San Francisco County, Elmer Bingham and Lester Gale, San Joaquin County; and Louis J. Needels, Santa Barbara County.

4. *Financial:*

(a) Statements of bank balances as of June 20, 1947, revenues and expenditures for May, 1947, and the eleven months ended May 31, 1947, and a balance sheet as of May 31, 1947, were received.

(b) Report was made that $200,000 par value U. S. Treasury bonds, due 1972 and callable 1967, had been purchased in accordance with Council authorization at the meeting of April 29, 1947, and these bonds transferred to the Trustees of the California Medical Association.

(c) A report was received from California Physicians' Service, showing that expenditures under the community enrollment campaigns during the first three months of 1947 had totaled $10,773.44, or $4,226.56 less than the $15,000 advanced by the Association to cover these additional expenses. The balance for this period has been returned to the Association.

5. *Public Relations:*

Mr. Whitaker reported on a proposed change in the length and hour of the Association's radio program, "California Caravan." It is now possible to secure a period from 1:30 to 2:00 p.m. each Sunday for 52 weeks on the American Broadcasting Co. network at a cost of $77,000 annually, compared with the present cost of $66,000 annually for the 15-minute evening period on Fridays. It would also be possible, with this new hour, to work with the Parent-Teachers Association and with schools in training drama and history students and thereby enlist their support of voluntary methods of health care insurance. On motion by MacLean, seconded by Askey, it was voted to make this change and to appropriate the sum necessary to carry on this program for a full 12 months.

Mr. Whitaker also pointed to the approval of "California Caravan" by the State Parent-Teachers Association and it was agreed that this approval should be publicized through the schools, department of education and other means.

Regarding community enrollment campaigns for voluntary health insurance, it was brought out that some educational and consumer problems had been encountered in the larger cities. On motion duly made and seconded, it was voted that such campaigns in the 19 California counties remaining to be covered should be confined for the time being to the more rural counties and that the campaigns in the larger counties be deferred until fall or later.

Dr. Cline read a letter from the California Tuberculosis and Health Association, in which a letter to county medical societies from the California Medical Association was criticized. After discussion, it was regularly moved, seconded and carried that an appropriate reply be prepared and presented to the Council the following day, the reply to bring out the fact that the medical association was in process of naming a committee to meet with the Tuberculosis and Health Association on matters of mutual interest.

6. *Public Policy and Legislation:*

Dr. Bruck reported on his attendance before a Senate Committee hearing on AB 1500, Governor Warren's health insurance bill, on June 10, at which time the bill was retained in committee and referred to an interim committee for study provided such a committee was to be named. (Later action by the Legislature failed to result in the formation of such a committee.)

Mr. Hassard then reported on the various bills in which the Association was interested, pointing out that on the whole the Legislature had given favorable consideration to the point of view of organized medicine on numerous bills.

7. *Legal Department:*

Mr. Hassard reviewed the present fee schedule for compensation cases and suggested the Association again look into a possible upward revision of this schedule. Upon motion by Cline, seconded by Anderson, it was voted that the Committee on Industrial Practice study this matter and bring in a report to the next meeting of the Council.

8. *Vacancy on Council:*

Dr. Askey called attention to a vacancy existing on the Council by reason of the resignation of Dr. Louis J. Regan of Los Angeles. He moved that the Council elect Dr. Eugene Hoffman of Los Angeles to this vacancy until the next meeting of the House of Delegates. This nomination was seconded by Dr. Charnock and the Council voted unanimously to elect Dr. Hoffman.

9. *Executive Session:*

At this point the Council went into executive session, with Mr. Hassard invited to remain present.

Mr. Hassard read the terms of an employment contract proposed for the employment of Mr. John Hunton as Executive Secretary. He was instructed to prepare a section covering partial disability of the Executive Secretary and report back the following day.

The Council then considered a statement from Peart, Baraty & Hassard in the amount of $4,119.53, covering $3,800 for professional services and $319.53 for expenses for the period of the 1947 session of the State Legislature. This statement had been submitted in accordance with the instructions given Mr. Hassard at the 203rd meeting of the Executive Committee. Upon motion duly made and seconded, this statement was approved for payment.

10. *Recess:*

At this point, 5:30 p.m., the Council recessed until 9:30 a.m., Sunday, June 22, 1947.

11. *Sunday, June 22, Meeting:*

The meeting was called to order by the Chairman at 9:30 a.m., Sunday, June 22, 1947, at the Fairmont Hotel, San Francisco.

12. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Vice-Speaker Charnock, Councilors Bruck, Shipman, Ball, Crane, Henderson, Anderson, Kneeshaw, MacDonald, Green, Cherry, MacLean, Bailey, Thompson and Hoffman, Secretary Garland and Editor Wilbur.

Absent: Councilor Lum.

Present by invitation were Executive Secretary Hunton, Legal Counsel Hassard, Public Relations Counsel Whitaker, Legislative Chairman Murray, Dr. C. L. Cooley, secretary of California Physicians' Service, Mr. William M. Bowman, executive director of C.P.S., Assistant Executive Secretary Wheeler and Executive Secretaries Rollen Waterson of Alameda County and Frank J. Kihm of San Francisco County.

13. *Rise From Executive Session:*

Upon motion duly made and seconded, the Council voted to rise from the executive session in effect at the time of the previous day's recess.

14. *Letter to Tuberculosis Association:*

Dr. Cline read the draft of a letter to the California Tuberculosis and Health Association, which, upon motion duly made and seconded, was approved to be sent by the Association secretary.

15. *Return to Executive Session:*

At this point the Council again went into executive session, with Mr. Hassard requested to remain.

Mr. Hassard read and explained a section of the proposed contract between the Association and the executive secretary covering partial disability and on motion duly made and seconded it was voted that the Chairman of the Council, the legal counsel and the Executive Secretary work out the details of this section.

On motion duly made and seconded, the Chairman of the Council and the Association Secretary were instructed to sign this contract when the section covering partial disability was satisfactorily framed.

16. *American Medical Association Meeting:*

Dr. Cline reported, as chairman of the California delegation, on the annual session of the A.M.A., held in Atlantic City June 9 to 13, 1947. He paid tribute to the fine work of all California delegates and stated that there was apparently increasing respect in the A.M.A. House of Delegates for the objectives which California delegates have sought in recent years.

17. *C.M.A. Annual Session—House of Delegates:*

The Council next considered the decisions of the Association's House of Delegates at its meetings of April 30-May 2, 1947.

(a) On Resolution No. 1, covering organization of sections of general practice in hospitals, it was regularly moved, seconded and carried that a copy of this resolution be sent to every hospital in California, with a letter of transmittal which would point out that this resolution was not intended to apply to hospitals which are not already departmentalized.

(b) On Resolution No. 6, covering prizes for scientific papers and scientific exhibits at annual session, it was regularly moved, seconded and carried that the Council Chairman appoint a committee on prizes, with authority for such committee to name a secret committee on awards.

(c) On Resolution No. 8, covering free choice of physician in compensation cases, it was regularly moved, seconded and carried to refer this matter to the Committee on Public Policy and Legislation for such action as it might be able to take, and to write the author of the resolution pointing out that further legislative proposals cannot be introduced at this session and requesting specific suggestions for legislation which might be introduced at the next session of the Legislature.

(d) On Resolutions No. 14 and No. 19, covering medical economics, it was moved, seconded and carried to refer these resolutions to the standing Committee on Medical Economics.

At this point there was a discussion of medical economics, including relationships between California Physicians' Service and the county medical societies. On motion duly made and seconded, and after the adoption of amendments, it was voted that a letter be sent to all county society secretaries suggesting (1) that publicity be given to the existence of professional conduct (fee-complaint) committees within each county society and (2) that efforts be made to eliminate all professional or lay organizations which grant rebates from fees received.

On motion by Cline, seconded by Anderson, it was voted to appropriate $2,500 to the Committee

on Medical Economics to inaugurate the work of the committee in accordance with instructions of Resolutions No. 14 and No. 19 of the 1947 House of Delegates.

On motion by Cline, seconded by Bailey, the Council voted the following program:

1. That California Physicians' Service be requested to continue its normal growth, and accept such new groups as may apply for membership, but to devote its primary effort to increasing the membership in existing groups during the next several months.

2. That Mr. Whitaker prepare and mail to all Association members a news letter or bulletin containing such information as he believes to be indicated after conference with the Committee on Medical Economics, the officers, the Legislative Committee and the Advisory Planning Committee.

3. That teams consisting of (1) an official representative of the Association, (2) an official representative of California Physicians' Service and (3) Mr. Whitaker or a member of his staff be sent to various county medical societies at their request to clarify, answer and attempt to resolve any questions concerning health insurance which may remain.

(e) On Resolution No. 10, covering qualifications of coroners, it was regularly moved, seconded and voted that an appropriate letter be sent to all county medical societies.

(f) On Resolution No. 22, covering the study of all health insurance programs, it was regularly moved, seconded and carried that this matter be referred to the Committe on Medical Economics.

(g) On Resolution No. 23, covering a study of the Principles of Ethics with particular regard to the propriety of certain types of prepaid medical care contracts, it was moved by Cline, seconded by Charnock and voted that a committee be appointed to study the matter and bring in a report, with no time limit set for the final report.

(h) On Resolution No. 25, covering awards for research by interns and residents, it was regularly moved, seconded and carried that the matter be referred to the committee on prizes established under 17 (b) above.

(i) On Resolution No. 29, covering a revision of the Association's Constitution and By-Laws, it was regularly moved, seconded and carried that the Council proceed with the formation of a committee, the Chairman of the Council to make the appointments to this committee for the Councilor districts as called for in the resolution.

18. *New Mexico Physicians' Service:*

A letter was read to the Council, in which the writer sought to become a temporary employee of the Association for the purpose of investigating asserted difficulties faced by New Mexico Physicians' Service. A motion that this letter be referred to New Mexico Physicians' Service failed to pass. On motion by Thompson, seconded by Alesen and amended by Askey (amendment accepted by the mover and seconder) it was voted that the writer of the letter be referred to New Mexico Physicians' Service and advised that the California Medical Association felt no need of his services at this time.

On motion by Kneeshaw, seconded by Ball, it was voted to send the executive secretary to New Mexico to look into the asserted difficulties there.

19. *California Physicans' Service:*

Resolution No. 28 of the 1947 House of Delegates, covering proposed operating procedure changes in C.P.S., was considered as a part of the C.P.S. agenda. On motion duly made and seconded, it was voted that the Council refer this matter to the Trustees of C.P.S.

Dr. C. L. Cooley, Secretary of C.P.S., then reported on the return of $4,226.56 to the Association out of the monthly appropriation for the first three months of 1947 and estimated that the return for the second calendar quarter would amount to $6,000 or $7,000. He also reported on problems facing C.P.S. in the proposed enrollment of the students at Menlo Junior College and in the attitude of some C.M.A. members. He stated that the Trustees of C.P.S. would meet June 29 to consider these matters.

Mr. W. M. Bowman reported that as of July 1, 1947, C.P.S. enrollment in the commercial program would be more than 500,000. For May, 1947, new enrollments totaled 43,000, over 35,000 of which came from the Southern California territory.

Mr. Paolini, auditor for C.P.S., then distributed the audited annual report of C.P.S. and reviewed it, answering questions.

20. *Committees:*

(a) On motion duly made and seconded, the Council approved the Chairman's selection of Councilors Shipman (chairman), Lum and MacLean as members of the Auditing Committee.

(b) Decision was deferred on the selection of an alternate to Dr. Donald Cass, Delegate to the A.M.A., to fill a vacancy.

(c) On motion duly made and seconded, it was voted to name the standing Committee on Technical Societies and Affiliated Groups as a liaison committee to meet with a similar committee from the California State Nurses Association.

(d) On motion duly made and seconded, it was voted that the standing Committee on Hospitals and Dispensaries be named to meet with an appropriate committee of the California Hospital Association in regard to the Hill-Burton Hospital Construction Bill.

(e) On motion duly made and seconded, it was voted that the Association president name a committee to meet with the State Department of Public Health to consider problems in connection with a possible increase in the incidence of poliomyelitis. President Cline named this committee as Donald D. Lum, chairman, Alameda; Harold Crowe, Los An-

geles; Sam J. McClendon, San Diego; Edward B. Shaw, San Francisco, and Otis Whitecotton, Oakland.

(f) On motion duly made and seconded, Dr. Carroll Andrews of Sonoma was voted as the Association's chairman of Rural Health Service, to work with an A.M.A. committee of which Dr. Frank Doughty of Tracy is regional director.

21. *Cancer Commission:*

At the request of the Cancer Commission, it was regularly moved, seconded and carried that $3,000 be appropriated toward the annual salary of a medical director to serve both the C.M.A. Cancer Commission and the American Cancer Society.

22. *New and Miscellaneous Business:*

(a) The Chairman read a letter from a colleague in Minnesota, suggesting that stricter requirements be placed on medical licensure in California. It was regularly moved, seconded and carried that this letter be referred to Dr. Frederick Scatena, Secretary of the State Board of Medical Examiners.

(b) It was regularly moved, seconded and carried that a letter referring to the administration of the Crippled Children's Act be referred to Dr. Jessie Bierman of the State Department of Public Health.

(c) The chairman reported a request from an official of the State Department of Public Health that the Association cooperate with the department in establishing a system of blood banks within the present framework and budget of the department. On motion duly made and seconded, the chairman was authorized to activate a blood bank committee previously appointed and to authorize it to work through physicians already active in community blood bank programs.

(d) Dr. Cline brought up the question of renewing efforts to enact a Basic Science Law in California. On motion duly made and seconded, it was voted that the Council Chairman appoint a committee to study this question. The chairman named as a committee a representative of the deans of the five medical schools in California (to be chosen by said deans), Drs. Dwight H. Murray, John W. Cline and E. Vincent Askey.

(e) It was regularly moved, seconded and carried that the Association become an Association Member at $200 annually of the information service inaugurated by Marjorie Shearon, Ph.D., of Washington, D. C.

23. *Time and Place of Next Meeting:*

It was agreed that the next meeting be held at the call of the Chairman, in Los Angeles about the end of September.

Adjournment.

EDWIN L. BRUCK, M.D., *Chairman*
L. HENRY GARLAND, M.D., *Secretary*

Minutes of Executive Committee Meeting

TENTATIVE DRAFT: MINUTES OF THE 203RD MEETING OF THE EXECUTIVE COMMITTEE, CALIFORNIA MEDICAL ASSOCIATION

The meeting was called to order by Chairman Shipman at the Family Club, San Francisco, at 6:30 p.m., May 22, 1947.

1. *Roll Call:*

Present were President Cline, President-Elect Askey, Speaker Alesen, Council Chairman Bruck, and the chairman, Sidney J. Shipman, Chairman of the Auditing Committee. Ex-officio member present, L. Henry Garland, Secretary-Treasurer. Present by invitation were Executive Secretary Hunton and Legal Counsel Hassard.

2. *Time of 1948 Annual Session:*

Secretary Garland reported that the dates of April 5-8 or April 12-15, 1948, were available for the 1948 Annual Session. On motion duly made and seconded, it was voted that the 1948 Annual Session be held from April 12 to April 15, 1948, in San Francisco.

3. *Employment of Executive Secretary:*

Chairman Shipman reported that the Council, in executive session on May 3, 1947, had suggested that the Executive Secretary be placed under a three-year contract, subject to renegotiation for renewal at some time prior to its terminal date. This was discussed and the Executive Secretary expressed approval of the contract terms, requesting that the salary increase be made at the rate of $2,000 per annum. At this point the Executive Committee went into executive session, Messrs. Hunton and Hassard retiring. On motion duly made and seconded, it was voted that the Executive Committee recommend to the Council that the salary of the Executive Secretary be increased $2,000 per annum for each of the next three years and that a contract for his services for that period be drawn up by legal counsel.

4. *Compensation of Legal Counsel:*

The committee discussed the extra services demanded of legal counsel during legislative sessions, over and above the services upon which the annual retainer fee is based. It was pointed out that the legislative services of legal counsel are increasing with each legislative session and that this work throws an extraordinary burden on legal counsel. Upon motion regularly made and seconded, it was voted that the committee recommend to the Council that the retainer fee of Peart, Baraty and Hassard remain at the present level and that legal counsel be requested to render a statement for extarordinary services rendered in connection with the Association's legislative activities.

5. *California Tuberculosis & Health Association:*

The chairman reported that some officials of the

California Tuberculosis & Health Association had been disturbed by a letter sent to county society secretaries under date of May 17, 1947, by Secretary Garland under instructions from the Council. He urged that the Association work more closely with the California Tuberculosis & Health Association. After discussion it was agreed that the Chairman of the Council should proceed with the appointment of a liaison committee authorized by the Council and that this committee be instructed to work toward the elimination of differences in the programs of the two associations.

6. *Reprints of Original Article:*

A request from the Council on Medical Service of the American Medical Association for 3,500 reprints of an article in the April, 1947, issue of *California Medicine*, for distribution throughout the country was presented. The article was written by Doctor John W. Cline and entitled "Public Relations of a State Medical Society." Upon motion duly made and seconded, it was voted that the Association provide the reprints requested.

7. *Agricultural Workers Health and Medical Association:*

A letter from Doctor J. Frank Doughty was presented, urging that medical care to the California Agricultural Workers Health and Medical Association be provided through California Physicians' Service. It was agreed that this suggestion merited further consideration and that additional facts be ascertained prior to presenting this matter to the Council.

8. *Public Policy and Legislation:*

Mr. Hassard reported on several pending legislative items and requested authority to handle certain situations in the light of current developments. Such authority was granted.

Adjournment.

In Memoriam

BABCOCK, LEWIS GEORGE. Died in Pasadena, June 5, 1947, age 52, following a long illness. Graduate of the College of Physicians and Surgeons, Los Angeles, 1921. Licensed in California in 1921. Doctor Babcock was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

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BOLINGER, HUGH J. Died in Lodi, June 28, 1947, age 59, of a heart attack. Graduate of Rush Medical College, Illinois, 1913. Licensed in California in 1914. Doctor Bolinger was a member of the San Joaquin County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✤

GAGNON, ARTHUR LOUIS. Died in San Diego, March 26, 1947, age 73, of coronary thrombosis. Graduate of Rush Medical College, Illinois, 1900. Licensed in California in 1921. Doctor Gagnon was a Retired Member of the San Diego County Medical Society and the California Medical Association.

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GOCHER, THOMAS EDMUND PEACHEY. Died in San Rafael, June 22, 1947, age 56. Graduate of the University of Toronto Faculty of Medicine, Ontario, 1915. Licensed in California in 1923. Doctor Gocher was a member of the Marin County Medical Society, the California Medical Association, and the American Medical Association.

✤

NIXON, ALBERT CROMBIE. Died in Los Angeles, June 15, 1947, age 59. Graduate of the University of Western Ontario Medical School, London, 1914. Licensed in California in 1922. Doctor Nixon was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

✤

SMITH, STEPHEN HERBERT. Died in Pasadena, June 3, 1947, age 67, of coronary thrombosis. Graduate of the University of Michigan Medical School, Ann Arbor, 1905. Licensed in California in 1907. Doctor Smith was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

NEWS and NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

Dr. John H. Lawrence, associate professor of medical physics on the Berkeley campus of the University of California and a pioneer in atomic medicine, at the invitation of the British Institute of Radiology delivered the annual **Mackenzie Davidson Memorial Lecture** of the Institute in London, July 17. He received a Davidson Medal, an annual award.

Dr. Milton H. Shutes, editor of the Bulletin of the Alameda County Medical Association, has written a biography of the late **Dr. William S. Taylor,** pioneer physician of the Livermore Valley, which was published in the May issue of the Bulletin. It was compiled from information secured by Dr. Shutes on a recent visit to Livermore where he interviewed persons who knew Dr. Taylor, as well as from histories and the files of medical journals.

KINGS

Tularemia was reported last May in specimens of three ground squirrels (C. beecheyi) which were collected on a ranch near Hanford in **Kings County,** the California State Department of Public Health reports. This was the first time, the Department's report said, that rodent tularemia had been demonstrated in Kings County.

Specimens were obtained by members of the Sanitary Inspections Section of the Division of Environmental Sanitation, and were analyzed in the department's laboratory.

LOS ANGELES

Dr. Roy O. Gilbert has been appointed Health Officer of Los Angeles County. He had been serving in that capacity as Acting Health Officer since July of last year, following the resignation of Dr. H. O. Swartout.

University of California Extension, in cooperation with the School of Medicine of the University, will offer an early fall group of medical **refresher courses,** beginning the latter part of September. Classes will meet on the Los Angeles campus of the University once a week for 12 weeks, with the exception of a class in Pediatrics, which will meet once a week for six weeks. The following courses will be included: Medicine, General Surgery, Cardiology, Dermatology and Syphilology, Otorhinolaryngology, Gynecology, Urology, and Pediatrics.

Included among well-known medical men who will lecture for these courses will be a number of University of California Medical School professors, nine specialists from various parts of the United States, one from Sweden and one from Mexico City.

Applications for enrollment are available from University of California Extension, Los Angeles 24, California.

SAN FRANCISCO

Dr. J. C. Geiger was elected chairman of the San Francisco Chapter of the National **Foundation for Infantile Paralysis** at the annual meeting of the board of directors in June. Physicians included on the board of directors are: Dr. Harold K. Faber, Dr. Le Roy C. Abbott, Dr. Edward B. Shaw and Dr. H. E. Thelander.

YUBA-SUTTER-COLUSA

Dr. Joseph E. Tillotson, for the past ten years medical director and chief surgeon of Memorial Hospital, left in July for London to take an advanced course in the use of radium and x-ray in the treatment of tumors and allied diseases. Dr. Tillotson has been granted a year's leave of absence.

GENERAL

The International College of Surgeons, United States Chapter, will hold its 12th Annual Assembly in Chicago, September 28 to October 4, 1947. The program will include operative and non-operative clinics, demonstrations, symposia, forums, medical motion pictures, exhibits and the formal dedication of the new library and permanent home of the United States Chapter. Copies of the program and detailed **information may be obtained** by writing Max Thorek, M.D., 1516 Lake Shore Drive, Chicago.

The American Congress of Physical Medicine will hold its 25th annual scientific and clinical session September 2-6, at the Hotel Radisson, Minneapolis. Scientific and clinical sessions will be given September 3, 4, 5 and 6. All sessions will be open to members of the medical profession in good standing with the American Medical Association. In addition to the scientific sessions, the annual instruction courses will be held September 2, 3, 4 and 5. These courses will be open to physicians and the therapists registered with the American Registry of Physical Therapy Technicians. **For information** concerning the convention and the instruction course, address the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

A tumor record registry on a voluntary, pilot basis in selected California hospitals was inaugurated July 1 by the Chronic Disease Service of the California Department of Public Health. Endorsed by the Cancer

Commission of the California Medical Association, the program will be carried out in consultation with the commission.

Purposes of the registry are to:

1. Determine the extent of cancer morbidity in the State.
2. Permit statistical-epidemiological studies.
3. Supply leads for clinical and laboratory research.
4. Facilitate follow-up of patients.
5. Evaluate therapy and the cancer control program.
6. Furnish information of value for professional and lay education.

The **American College of Allergists** has announced that its annual Fall Graduate instructional Course in Allergy will be given in Cincinnati, November 3-8, inclusive, under the auspices of the Medical College of the University of Cincinnati. Forty-six formal lectures are listed on the program, and in addition there will be a special allergy clinic of case presentations. An added feature this year will be three informal discussion groups led by various members of the faculty. The course presents a comprehensive study of the entire field of allergy—covering the fundamentals, special allergies, specific diseases, and all modern methods of treatment. The course is designed to be of benefit to the general practitioner and specialist who anticipates treating his own allergic patients, as well as to those especially interested in allergy.

Programs and **complete information** can be obtained by writing to Dr. Fred W. Wittich, 423 La Salle Medical Building, Minneapolis 2, Minnesota.

Dr. William C. Menninger, Chief Consultant in Neuropsychiatry to the Secretary of War, and Secretary of the Menninger Foundation, Topeka, Kansas, was made President-Elect of the **American Psychiatric Association** at the annual meeting of the Association.

Dr. Menninger was a brigadier general and wartime Chief Consultant and Director of the Neuropsychiatry Consultants Division in the Office of the Surgeon General. He received the Distinguished Service Medal for his work in the Army and the first Lasker Award in November, 1944, for his contributions to the field of mental hygiene.

Dr. R. R. Spencer resigned July 1 as Chief of the **National Cancer Institute** of the U. S. Public Health Service and was succeeded by Dr. Leonard A. Scheele, formerly Assistant Chief of the Institute. Dr. Spencer will continue to work with the Institute. He said that in resigning he was "shedding the constantly increasing load of administrative duties in order to spend full time on the two phases of the cancer program that interest me most—professional education and research."

INFORMATION

San Francisco County Medical Society Replies to Request for "Economies" in Treating Compulsory Insurance Patients

Indication of what may be expected in the operation of a compulsory medical service plan by a political body when funds fall short of requirements is given in a letter by the Medical Director of Health Service System, to which employees of the City and County of San Francisco are compelled to belong as a condition of employment.

The letter, which was sent to physicians treating City-County employees under the plan, asked that they withhold certain services so that the costs of diagnosis and treatment could be held within the Health Service System's income. Taking note that the System recently had been unable to pay doctors the full amount of fees agreed upon, the Medical Director said that only through reducing the service to patients could the fees be returned to their former level.

In a reply to that letter, the San Francisco County Medical Society forth-rightly stated what is probably the attitude of Medicine generally toward this sort of "economizing" to increase fees at the expense of patients' health.

Editorial treatment of the Health Service System letter and the reply by the County Medical Society was given by the San Francisco News.

Pertinent excerpts from both letters, and the editorial comment by the News, follows:

"Let me place before you," the Medical Director said in his letter, "some figures so that you may realize the manner in which our bills have stepped up:

"An increase in total medical expense for February 1947 over the same month of the previous year is 36 per cent.

"During the same period the increase in membership was 6 per cent.

"The increase in the number of units of doctor services was 38 per cent.

"Office calls for February 1947 increased 20 per cent over the same month of 1946.

"Hospital expense was 87 per cent higher than for February 1946. This is due to substantial increases both in total days of hospitalization used and in the cost per patient-day while in the hospital.

"X-ray cost for ambulatory patients has increased 65 per cent in March 1947 over March 1946.

"Increase in clinical laboratory expense for ambulatory patients was 34 per cent in March 1947 over March 1946.

"During this period there has been no endemic of disease in the city and no unusual epidemic of any disease. The membership in the Health Service System has not increased perceptibly during the year."

As to the reasons for the increase and what to do about it, the Medical Director's letter had this to say:

"The Health Service System members have contributed to this great increase by demanding too much medical service. People in general have more knowledge now on medical subjects gained from magazines, public lectures, and from over the radio; also from quack advertisements in the newspapers. Much of the so-called medical knowledge gained in this way has given them a mass of false information. It has brought about many unnecessary visits to the doctor to get treatment for trivial things. Such minor ailments could be treated as well by their home remedies as by the doctor. Such needless calls take up the doctor's time and add a great expense for the System.

"I appeal to the physician to give our System his help in this matter. It can be done by explaining to the patient that he should not apply for treatment for such minor ailments and that it will not be necessary for him to return for treatment for this simple thing.

"The members themselves as well as the doctors are to blame for the no doubt thoughtless increased cost of clinical laboratory and x-ray expense. The people in general know little about the results that can be obtained from the help of the laboratory tests or the x-ray examinations. Please, doctor, turn such requests aside; explain to them that when needed you will have the examination made.

"In this regard I now make an earnest appeal to the doctors to limit their laboratory tests and x-ray examinations to just what is necessary to make a diagnosis. It would seem that any physician, after taking a short history of his patient's case and making a routine examination in his office, or in the home, will find that he can make a diagnosis without leaning so much upon the laboratories and the x-ray departments. In making a survey of the results of several hundred such examinations, particularly as regards the x-ray, because I have in the histories the reports from the x-ray laboratories, I feel safe in saying that between 50 and 60 per cent of them are unnecessary. The survey of the G-I series and the barium enema examinations revealed that these were negative in nearly 75 per cent of the cases.

"This request also applies to the patients you have in the hospitals. It is true that some laboratory work must be done to comply with the hospital rules, but it should not be necessary to order the many labo-

ratory tests or x-ray examinations that would contribute nothing to the diagnosis and add greatly to the expense of our hospital bills.

"Every patient in the hospital is costing the Health Service System over $13 a day. The average ward rate is $9 a day but when the patient is in the hospital our System pays all the laboratory and x-ray charges as well as for the use of the operating room and the anaesthetist's fee. Within the last few months we have had an average of thirty-one patients a day in the hospitals. This has made our hospital bills excessive in the extreme. It is all very well for municipal hospitals and for university hospitals which are teaching schools, gathering statistics for the records, to make such thorough physical examinations of their patients, filling many pages of histories with the physical findings and laboratory tests for the benefit of their students and the records of the college. The members of the Health Service System, except in a few obscure cases, do not need any such extensive work."

Then, taking up the question of hospitalization and charges for diagnostic study of problem cases, the letter continues:

"Within the last six months doctors have gotten into the habit of hospitalizing Health Service System members for conditions that could be treated in the office or in the home. This is wrong and puts our System to an outstanding unnecessary expense. Sending patients to the hospital under benefits of the Health Service System must have the permission of the Medical Director. In many instances this is not being done. The first notification we receive is a notice from the hospital the next day of the patient's admittance.

"Hereafter no patient, except in an emergency case, will be entitled to hospital benefits under Health Service System coverage until authorization has been given by the Medical Director.

"The so-called diagnostic study of problem cases has always been one of contention. For this service our System pays fifteen units, and allows the regular fee of $10 for necessary laboratory tests and $15 for required x-ray examination if the patient is open for these benefits. Permission must be requested of the Medical Director to make this study. Such requests are being made far too frequently in the last few months. I have reviewed the histories the doctors have submitted on many such cases and have given special attention to the summing up of the conclusions that the internists have made and it is my opinion that very few cases are *problem* cases requiring such a study and such an expense.

"The question, then, is, what is a problem case requiring such a work-up? The answer can be given in the doctor's own definition, as stated in the fee schedule of the C.P.S.: 'Complete history and physical examination on authorization of the Medical Director and only in cases with *obscure* diagnostic problems!'

"Sending patients to the hospital to make a diagnostic study is against the rules of the Health Service System, but recently this is frequently being done and without authorization. It is true that the patients may be in the hospital only three or four days but during that time they have been given all the x-ray and laboratory tests that the hospitals have to offer and these at the expense of the Health Service System. This cannot continue except in certain special cases and on authorization of the Medical Director."

MEDICAL SOCIETY'S REPLY

In reply, the San Francisco County Medical Society:

"The San Francisco County Medical Society, as your Board should be fully aware, cannot countenance nor condone any attempt to influence its members to deny adequate medical care to the sick or injured.

"We, therefore, cannot permit to go unchallenged the highly questionable letter sent out by your Board, through your employed medical director, Dr. Alexander S. Keenan, to doctors who are members of the professional staff of the Health Service System of San Francisco. . . .

"In this astonishing letter to the doctors who care for the thousands of city employees insured under the Health Service System, the management of the System, pleading that the plan is in financial difficulties, bluntly calls on the doctors to lower the quality of medical care provided, and to limit laboratory tests, x-ray examinations and normal diagnostic procedures.

"This medically unethical plea is advanced by your Board, through its agent, on the basis that the System has been losing money, even though it recently increased its rates to its employed members 21½ per cent, and dropped the unit value paid to doctors in March by 20 per cent.

"Only by economizing at the expense of their patients, the doctors are flatly told, can they expect to have their fees returned to the former level, or escape future reductions.

"In effect, this letter from your Board is a confession that the Health System, as now operated, is actuarially unsound and cannot keep its commitments, unless the doctors will accede to your demand to cheapen the quality of medical care and deny city employees the same high standard of care provided other patients.

"The Board of Directors of the San Francisco County Medical Society formally and vigorously protests this attempt by your Board to deny adequate medical care to the thousands of city employees, and members of their families, insured under the Health Service System.

"The doctors of San Francisco will not gamble with the health of their patients to improve their own fee schedule, nor will they be parties to any bureaucratic experiment in cheap, assembly-line medicine. . . .

"Some of the amazing recommendations made by your management to the doctors who are members of the professional staff of the Health Service System would turn back the clock in medicine a hundred

years—and it is almost unbelievable that your Board would seriously advance such suggestions.

"For example, we ask that you re-consider this paragraph in your ill-considered, four-page letter:

> 'People in general have more knowledge now on medical subjects gained from magazines, public lectures, and from over the radio; also from quack advertisements in the newspapers. Much of the so-called medical knowledge gained in this way has given them a mass of false information. It has brought about many unnecessary visits to the doctor to get treatment for trivial things. Such minor ailments as could be treated as well by their *home remedies* as by the doctors. Such needless calls take up the doctor's time and add a great expense for the System.'

"The San Francisco County Medical Society, the California Medical Association, the American Medical Association, our university medical schools, the insurance industry and scores of splendid lay organizations have worked for years to promote public health education—and now your Board advises that we tell the people who come in for treatment or diagnosis that they would be just as well to dose themselves with home remedies. If that unenlightened advice was followed, we wonder whether your Board would accept responsibility for the 'minor illnesses' which had fatal consequences, due to faulty self-diagnosis.

"Again, your letter appeals to doctors to 'limit their laboratory tests and x-ray examinations,' and then proceeds with this specious attempt at justification:

> 'It would seem that any physician, after taking a short history of his patient's case and making a routine examination in his office, or in the home, will find that he can make a diagnosis without leaning so much upon the laboratories and x-ray departments.'

"We wonder if any one of the Board members, when his wife or child was ill, would want either to have that kind of 'routine examination.'

"But then your Medical Director goes on to say:

> 'In making a survey of the results of several hundred such examinations, particularly as regards the x-ray, I feel safe in saying that between 50 and 60 per cent of them are unnecessary. The survey of the G-I series and the barium enema examinations revealed that these were negative in nearly 75 per cent of the cases.'

"Let's turn that statement around. Apparently from 40 to 50 per cent of the examinations were 'necessary'—and if 75 per cent of the cases, in the latter category, were negative, it follows that 25 per cent were positive!

"What type of medical practice do you think we would have if we failed, due to false economy, to make proper diagnosis in 50 per cent of the cases—or in 25 per cent? Is that the kind of health service you promised the city employees when they were insured under your System? Are you willing to get up before them and defend that type of medical care? We don't believe it.

"Your management also complains of rising hospital costs and has a ready if dangerous remedy—less hospitalization!

"That is not an acceptable answer to doctors who have the welfare of their patients at interest. If the Health Service System cannot provide adequate hospital care for its insured members, it should, in all fairness, so advise the city employees—and not ask doctors to go against their own medical judgment in refusing hospitalization to their patients, when the health, or possibly even the life of the patient, may depend on the decision.

"In view of the acute shortage of hospital facilities, it is absurd for your Health Service Board to argue that doctors are hospitalizing patients who do not require it. We have great difficulty in finding hospital beds even for patients who are critically in need of hospital care.

"There is much more that is wholly untenable and unacceptable in the instructions and suggestions which have been sent to the doctors by your Board, but we will not attempt to deal with each issue specifically in this letter, as it is clearly evident that fundamental changes must be made in the operation of the Health Service System if a complete break down is to be averted.

"Whether you recognize it or not, and we believe that you must, the Health Service System, as now constituted, is actuarially unsound and cannot continue to provide the benefits which it has guaranteed its members. No self-respecting doctor, with pride in his profession, will be a party to your program to treat city employees as 'second class patients' to enable your Board to try to bolster a System which is basically unsound.

"As you will recall, the San Francisco County Medical Society, for years past, has warned your Board that the Health Service System was being operated in defiance of accepted actuarial and insurance principles, and has repeatedly recommended that changes be made to place the System on a sound basis. . . .

"We believe your Board, rather than attempting to bolster an unsound System by the wholly impractical and medically dangerous expedients set forth in your letter . . . should frankly tell the city employees that the present plan has failed.

"We believe that you should then state that you wish an expression of opinion from them as to whether an insurance-indemnity System should be established, or whether a contract should be entered into with one or several of the established voluntary health systems to provide the necessary coverage. . . ."

EDITORIAL COMMENT

The *San Francisco News*, in an editorial:

"An ill-conceived letter from the medical director of the city employees' compulsory health service system addressed to the doctors participating in the plan furnished the County Medical Society with a perfect opportunity to blast compulsory health in-

surance. The society's letter, made public yesterday, did the job with completeness and finesse. As a result, the cause of universal health insurance has been done serious harm.

"The medical director's letter appealed to the doctors to reduce the amount and quality of service rendered to beneficiaries of the plan—a preposterous suggestion—regardless of the fact that costs of the service have mounted enormously. Obviously the system itself, finding its operations running into heavy weather, should have modified its services to correspond with its income and thus kept itself actuarially sound. No physician could tolerate an appeal to lower standards of the profession's practice.

"An appeal did go out to beneficiaries of the system, as well as to the doctors. That move was justifiable, on the ground that the beneficiaries have a mutual interest in keeping service at the highest possible level for serious illness and can help guarantee that by not demanding too much service for minor sickness.

"This crisis in the health service system, it appears to us, could have been avoided by application of more business judgment, foresight, and attention to public relations as well as by stricter observance of the rules. If the system is in such dire straits as the medical director's letter implies, the appeal that went out to both the medicos and the members comes at a very late hour. We cannot but wonder why the critical situation was allowed to develop without remedial action much earlier."

Hawaii Physicians Defeat Political Medicine Proposals

Methods used effectively by organized medicine in Hawaii in defeating measures for political distribution of medical care in the Territory, and steps taken to guard against the passage of such legislation in the future, are reported by the National Physicians Committee for the Extension of Medical Service.

"During the past three months," the Committee reports in an Informational Bulletin, "the most serious threat for the introduction of the political distribution of medical care occurred in the Territorial Legislature of Hawaii. Had this legislation been enacted, it would have introduced in the United States a precedent with far-reaching implications and results.

"In 1945 the territorial legislature passed a joint resolution creating a Hospital Services Study Commission. This Commission filed a voluminous report at the beginning of the 24th session of the Legislature on February 19, 1947. On the basis of this report two compulsory sickness insurance bills were introduced in the lower house of the Legislature. Bill 747 was identical with the suggested bill in the report of the Study Commission. Bill 941 was a more comprehensive plan for sickness insurance.

"The latter bill found favor with the members of the legislature who were politically indebted to the labor unions.

"In order to defeat the two proposals the Territorial Medical Association engaged in a very intensive public relations program which included the following phases:

1. A series of conferences was held with each of the major business associations, religious and educational organizations, to alert these groups concerning the full implications of compulsory sickness insurance.
   Culminating this series of meetings, fifty leading business men of the Islands were brought together for a lengthy conference, and by formal resolution agreed to support the position of medicine against the enactment of the proposed legislation.
2. Radio was used extensively to interview community leaders and to demonstrate to the general public that the compulsory sickness insurance plan was inimical to the best interest of the community. Many of the leading personalities of the Islands appeared on these radio programs.
3. At frequent intervals during the legislature advertising space was purchased in the newspapers to explain the profession's point of view. In addition, considerable editorial space was obtained and a steady stream of letters to the editor in opposition to this legislation appeared in the newspapers.
4. Constant contact was maintained with all friendly members of both houses of the Legislature, and particularly with the members of the Committee on Public Health.
5. A number of physicians prepared critical analyses of the legislation and delivered scores of talks before civic, religious, educational and business groups.

PUBLIC HEARINGS

"On April 24 public hearings on House Bills 747 and 941 were held by the Committee on Public Health. Contrary to all expectations the proponents were able to muster only three witnesses to testify in favor of the legislation, while eleven witnesses testified against the proposal and many others were prepared to do so had the hearings been extended.

"As a result of the intensive activities of the professions and the strong showing made during the public hearings, the Committee on Public Health pocketed both Compulsory Sickness Insurance Bills.

"During the last days of the session, which adjourned on May 3, the proponents made an effort to secure passage of a concurrent resolution to extend the Hospital Study Commission until the next session of the Legislture. This proposal was also defeated.

LONG RANGE PUBLIC RELATIONS PROGRAM

"The Territorial Medical Association has now established a long range public relations program. This program will be adequately financed by an annual assessment on the members of the Association and includes all phases of a sound public relations policy."

BOOK REVIEWS

Rh . . . ITS RELATION TO CONGENITAL HEMOLYTIC DISEASE AND TO INTRAGROUP TRANSFUSION REACTIONS. By Edith L. Potter, M.D., Ph.D., Assistant Professor of Pathology, Department of Obstetrics and Gynecology, The University of Chicago and the Chicago Lying-In Hospital. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago. Price $5.50.

At last we have in handbook form a complete review and abstract of the essential material on the subject of the Rh factor and its clinical importance in hemolytic disease of the newborn, intra-group transfusion reactions, and the whole problem of the isoimmunization of pregnancy. The author, Dr. Edith L. Potter, is eminently qualified to bring balance and sanity to a subject which has been unnecessarily confused and muddled by artful and artless fancy. An unusual feature of the book is its authoritative and complete analysis of the pathological import of hemolytic disease of the newborn. Doctor Potter has made many pertinent contributions to this subject and she is a recognized authority in the field. Another fine feature is the exhaustive bibliography, alphabetically arranged and covering more than 300 references.

Doctor Potter is not only a pathologist, but she holds an active appointment in the clinical field of Obstetrics at the University of Chicago. Therefore her experience with diseases of the newborn extends from the bedside to the post-mortem table.

The early chapters of the book deal with the discovery of the Rh factor, its biologic and immunologic properties and its role in the pathogenesis of transfusion reactions and hemolytic disease of the newborn. This material is well presented and expressed with great simplicity. The part of the volume that deals with technical applications of the problem is again very well organized and designed to answer the usual questions proposed by the clinician. Doctor Potter finds space to discuss some of the phases of the prevention of hemolytic disease of the newborn, including moral, philosophic, and biologic aspects of the subject. She appends simple rules for avoiding unnecessary immunization. On the subject of prevention, she discusses the use of blocking antibody, purified haptenes, agglutinin absorption, typhoid and pertussis vaccination, and the weighty problem of the early induction of labor. Included in this section are notes on the subject of artificial insemination. There is a short but adequate chapter on treatment. There also is included a section dealing with the technical data encountered in the laboratory, and very good photographs of the details and technique of the Rh agglutinin test. Throughout the volume the reader is impressed by the scientific accuracy and honesty of the reviewer and the gentle humor of her criticism which to the reader might have been more profitable had it been more harsh. The book could have been made more valuable had this eminently qualified author given more of her own conclusions rather than the controversial ones of much less qualified workers in the field.

I hope that the next edition will contain a more complete Table of Contents, a fault not of the author but of the publisher, since the author made provision for extensive indexing by including topical headings of each new subject within the text of each chapter.

* * *

ALLERGY IN THEORY AND PRACTICE. By Robert A. Cooke, M.D., Sc. D., F.A.C.P., Attending Physician and Director of the Department of Allergy, the Roosevelt Hospital, New York City. 572 pages, with 43 illustrations. Philadelphia and London: W. B. Saunders Company. 1947. Price $8.00.

This book discusses the mechanism, diagnosis and control of most clinical allergy. Cooke properly decries too great dependence on skin testing. His question about the role of histamine in the allergic reactivity, his inability to benefit urticaria or chronic asthma or increase tolerance for histamine with histamine therapy and his disapproval of hapamine coincide with the idea of many allergists. Most alergists will disagree, however, with this exclusive use of intradermal tests and the unnecessary standardization of extracts by the protein nitrogen unit rather than by weight (Noon unit). General experience, moreover, shows that bronchial asthma in all ages is due to food and inhalant allergy, occasionally to drug allergy and rarely to bacterial allergy, to which Cooke gives great importance. Sinal surgery to remove hyperplastic membranes as a source of assumed bacterial allergy is rarely if ever required when food and inhalant and rarely bacterial allergies are controlled. His use of opiates, barbiturates and even demoral and paraldehyde in asthma will receive general disapproval.

Allergists will not agree with his idea that allergic dermatitis is never due to wheal-producing food and inhalant allergens as in hay fever. His cited cases of contact allergy to foods, drugs and chemicals fail to prove this mechanism as the usual cause.

Cooke discusses urticaria and angioneurotic edema and probable clinical allergy in the gastrointestinal tract, nervous tissues and eyes. In general food allergy is not sufficiently recognized due to his failure to use trial or elimination diets properly for adequate periods of time. The experience of many physicians, moreover, will refute the statement that "this matter of allergy diets is a much overrated fad."

Spain's discussion of bronchial asthma due to ingested foods and drugs will receive general approval. Harkavy's chapter on cardiovascular allergy should be studied by all internists and allergists, particularly that arising from tobacco and bacterial allergies. Waltzer offers helpful suggestions about

skin testing and describes indirect testing which he originated.

Finally, Cooke confirms the failure of vitamin C to benefit allergy and decries the tendency to attribute true manifestations of allergy to psychosomatic causes.

* * *

BACTERIOLOGY. Laboratory Directions for Pharmacy Students. By Milan Novak, Ph.D., M.D., Professor and Head of the Department of Bacteriology and Public Health, University of Illinois, Colleges of Medicine, Dentistry and Pharmacy, Chicago, and Esther Meyer, Ph.G., Ph.D., Assistant Professor of Bacteriology and Public Health, University of Illinois Colleges of Medicine, Dentistry and Pharmacy, Chicago. Second Edition. 1947. The C. V. Mosby Company, St. Louis.

This laboratory manual is designed to present the important aspects of medical and sanitary bacteriology in 36 periods. The experiments are somewhat less elaborate than those usually arranged for medical students. The manual should be quite satisfactory as a laboratory guide for the study of bacteriology by students of pharmacy.

* * *

THE PREMATURE BABY. By V. Mary Crosse, M.D. (London), D.P.H., M.M.S.A., D.R.C.O.G., Chief Obstetric Officer in charge of City of Birmingham Maternity Homes and Premature Baby Unit. With Foreword by Leonard G. Parsons, M.D., F.R.C.P., F.R.C.O.G. With 14 illustrations. 1946. The Blakiston Company, Philadelphia.

This little volume of 142 pages discusses prematurity and its management with the clarity and certainty that only years of personal experience can give. This experience was gained at Birmingham City premature Baby Ward in England. Obstetrics in England is practiced quite differently than in this country, with many more home deliveries and much more work done by midwives. The management of premature births is, therefore, a somewhat different problem than in this country, but the simplicity of the organization and the excellent results obtained under such management are indeed a comfort about which to read. The book covers, without a waste of words, the characteristics of newborns, as well as the problems of maintaining temperature, oxygen, feeding, complications due to prematurity infections, etc.

The book is very explicit and should be of value to physicians, especially those practicing in small towns and rural areas. It can, however, be read with profit by pediatricians, house officers and nurses. A problem studied in another country often leads to somewhat different conclusions than those generally accepted in one's own medical environment and this always presents a challenge to look objectively at our traditional practices in order to re-evaluate them.

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THE 1946 YEAR BOOK OF OBSTETRICS AND GYNECOLOGY. Edited by J. P. Greenhill, B.S., M.D., F.A.C.S. The Year Book Publishers, Inc., Chicago. Price $3.75.

The latest issue of Dr. Greenhill's Year Book (1946) carries on the high standards of the previous editions. The literature published in the English-speaking countries has been quite comprehensively surveyed. Many of the more significant articles from South America have been reviewed. The editorial comments integrate the wide expanse of the material covered. The principal topics presented include the role of nutrition in pregnancy, abortion, the toxemias of pregnancy, analgesia and anesthesia in obstetrics, breech presentation, the Rh factor, infertility, operative technique, genital neoplasms, and menstruation and its disorders. Greenhill's work is replete with information for the senior student, the candidate for examination before the State or National Board, as well as for the practitioner and specialist in obstetrics and gynecology.

* * *

SEX EDUCATION, A Guide for Parents, Teachers and Youth Leaders. By Cyril Bibby, M.A., M.Sc., F. L. S. Education Officer to the Central Council of Health Education; Senior Lecturer at the College of St. Mark and St. John, London; sometime scholar of Queen's College, Cambridge. Published October 23, 1946. 311 pages. Emerson Books, Inc., New York. Price $2.50.

This book is the American edition of an originally English text. In common with a good many English textbooks, this one is particularly notable for its readability. The whole matter of sex education from early childhood through marriage is discussed with a conciseness and conviction that leaves no room for doubt.

A book such as this can be great help to parents and it is not amiss to remark that some of our own colleagues would profit immensely if they would give some recognition to this too frequently neglected subject.